

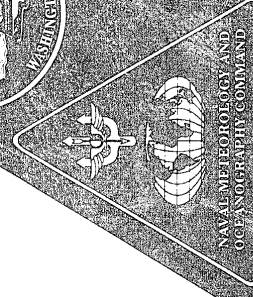
EASTERN - WESTERN
ARCTIC SEA ICE ANALYSIS
1993

PREPARED BY
NAVAL ICE CENTER
SUITLAND, MD

PREPARED UNDER AUTHORITY OF
COMMANDER, NAVAL METEOROLOGY AND
OCEANOGRAPHY COMMAND
STENNIS SPACE CENTER, MS 39529-5000

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FOREWORD

The U.S. Navy has a long and eventful history of polar exploration, including the exploits of Robert E. Peary in the Arctic to Richard E. Byrd in the Antarctic. Recently, the strategic importance and expanded polar research produced greater national and international requirements for environmental information. Since 1976, the National Oceanic and Atmospheric Administration (NOAA) and the Navy (Naval Ice Center) have worked together at the Joint Ice Center (JIC) in Suitland, Maryland; the combination of their resources and efforts continues to satisfy the demand for environmental information in both polar regions.

This publication is the 20th edition of the annual Arctic sea-ice atlases prepared by the JIC. The atlas contains weekly charts depicting Northern Hemisphere ice conditions and extent. The significant use of high resolution satellite imagery, combined with valuable ice reconnaissance data from various sources, has greatly improved the accuracy of these analyses.

The purpose of this atlas is to provide the user with reliable weekly hemispheric ice analyses. These charts are prepared by experienced Navy and NOAA ice analysts, who plot and evaluate numerous data sources:

- a. Conventional shore station, ship, and aerial reconnaissance observations;
- b. Satellite data from various sensors. Table 1, located on the inside back cover, lists these sensors and their availability;

A final product is synthesized from the inputs described above. When insufficient data is available, estimated boundaries are plotted, using meteorological data and computer generated ice drift vectors to determine estimated ice position.

Joint Ice Center
Naval Ice Center
4251 Suitland Rd, FB#4
Washington, D.C. 20395

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
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Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C - Contract	PR - Project
G - Grant	TA - Task
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NASA - See Handbook NHB 2200.2.

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NASA - Leave blank.

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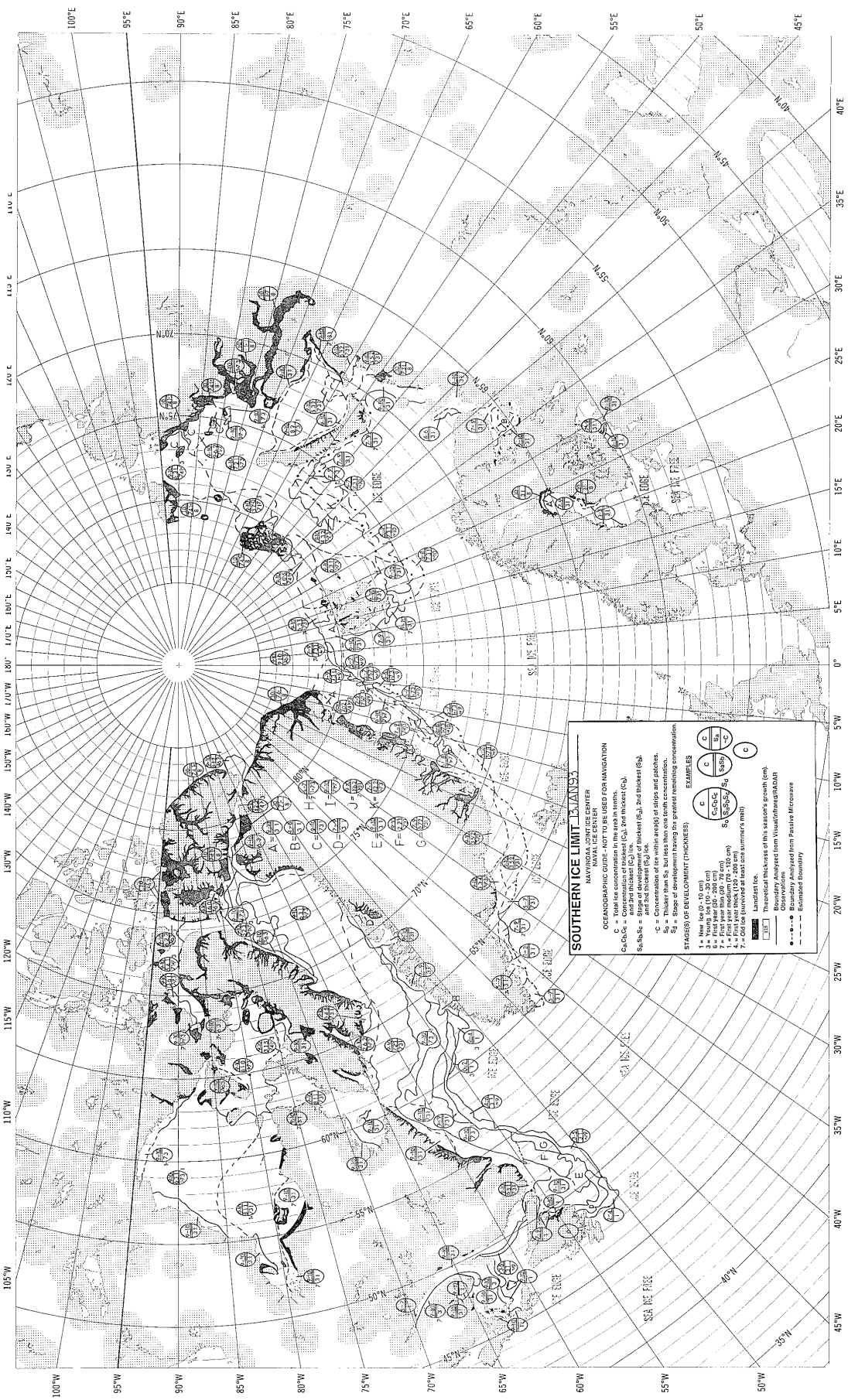
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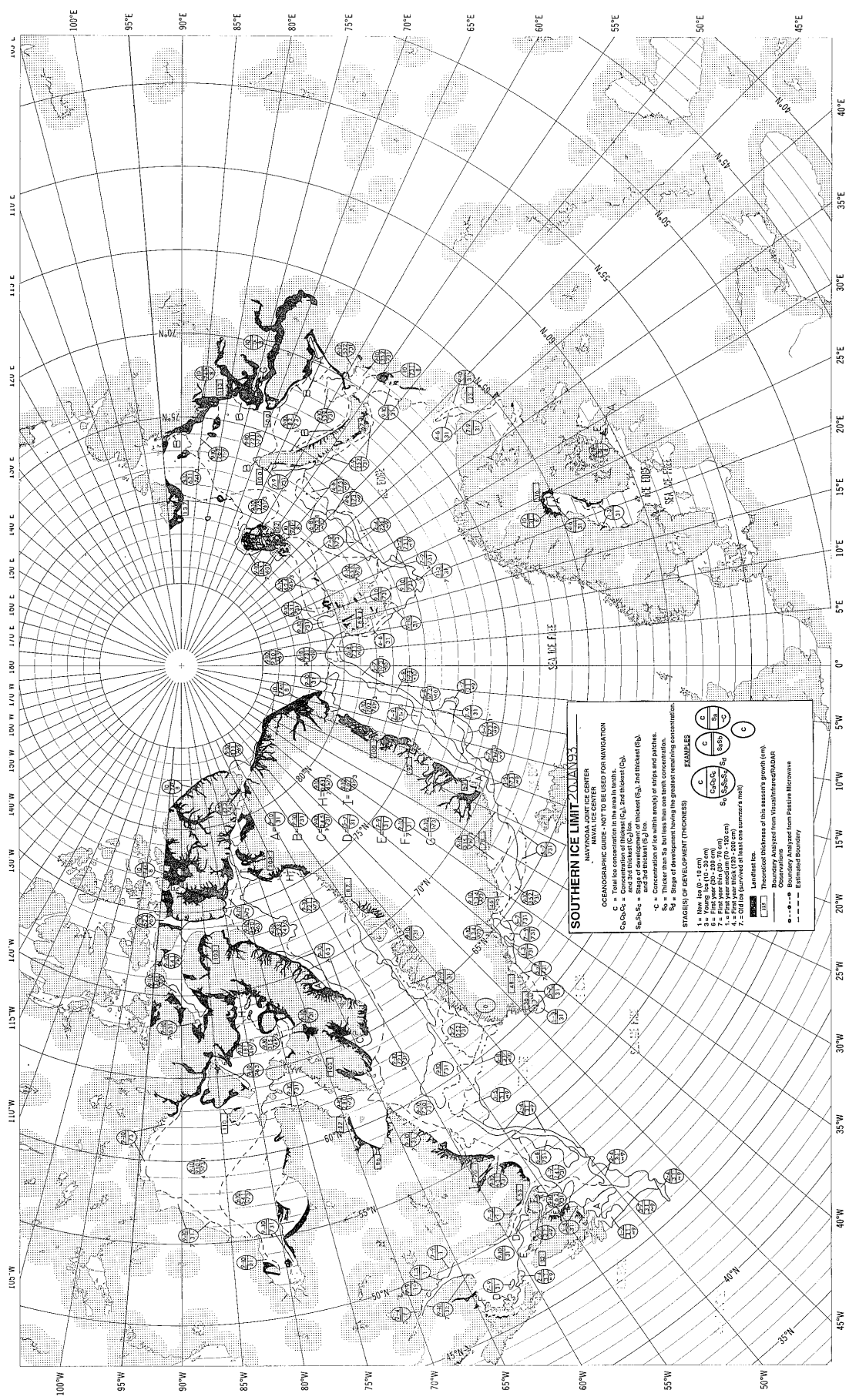
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SOUTHERN ICE LIMIT 2012-13
 NAV/NOAA JOINT ICE CENTER
 NAVAL ICE CENTER

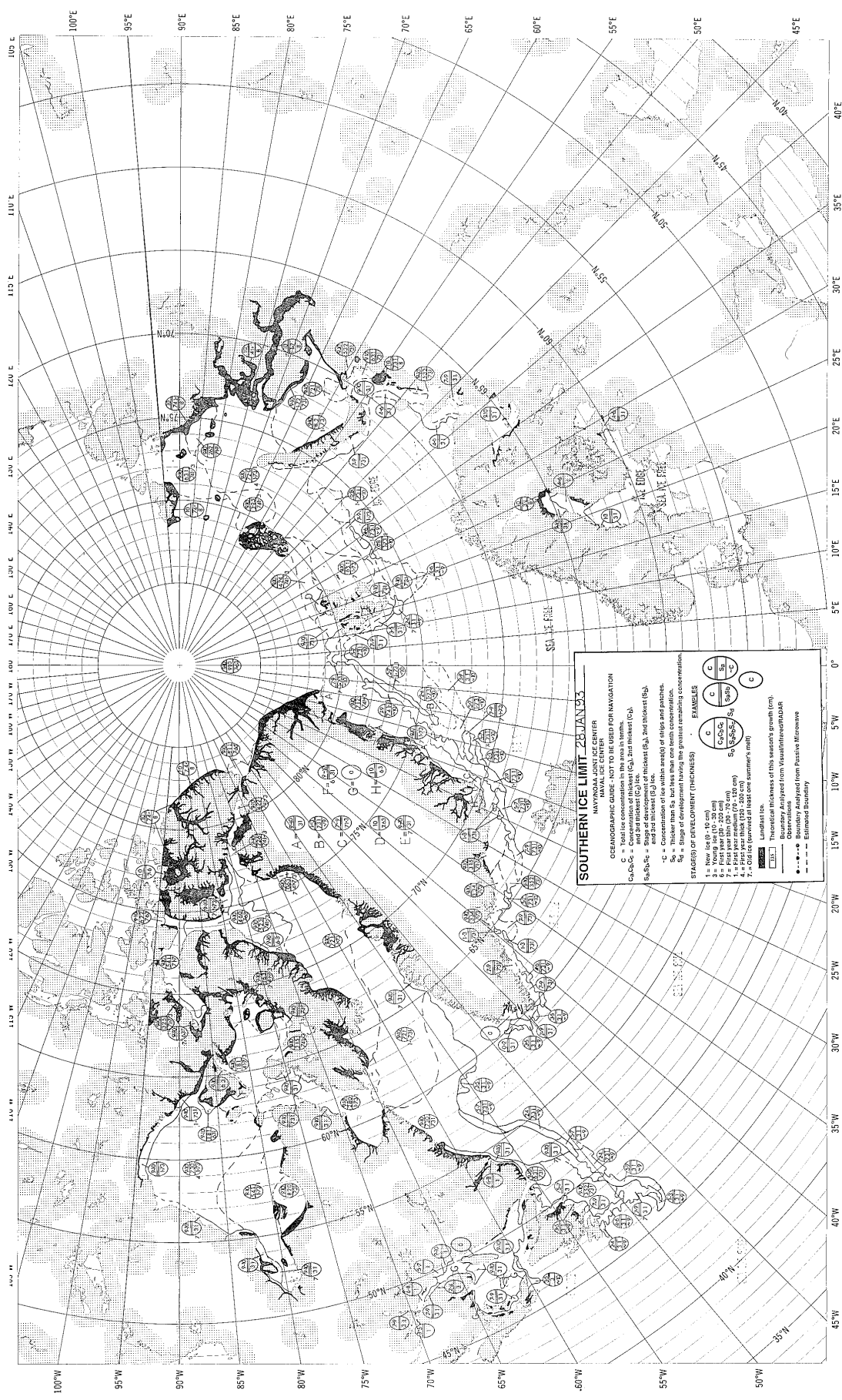
OCEANOGRAPHIC DATA FOR NAVIGATION
 C = Total ice concentration in the area in parts.
 C₁C₂C₃ = Concentration of thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃) ice.
 S₁S₂S₃ = Area covered by thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃) ice.
 C = Concentration of ice within width of ship's and paddle.
 S = Stage of development having the greatest remaining concentration.

STAGES OF DEVELOPMENT (THICKNESS)
 1 = New ice (0 - 15 cm)
 2 = Young ice (15 - 30 cm)
 3 = First year thin (30 - 70 cm)
 4 = First year thick (70 - 100 cm)
 5 = First year thin (100 - 200 cm)
 6 = First year thick (100 - 200 cm)
 7 = Old ice (survived at least one summer's melt)

EXAMPLES

$\frac{C}{S_1}$	$\frac{C}{S_2}$	$\frac{C}{S_3}$
$\frac{C}{S_1}$	$\frac{C}{S_2}$	$\frac{C}{S_3}$
$\frac{C}{S_1}$	$\frac{C}{S_2}$	$\frac{C}{S_3}$

Legend:
 Landline Ice
 Boundary Assigned from Visual Observations
 Boundary Assigned from Satellite Microwave
 Boundary Assigned from Visual Observations and Satellite Microwave
 Estimated Boundary



SOUTHERN ICE LIMIT 28 JAN 93

NATYNDAAL JUNE ICE CENTER
OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

C = Total ice concentration in the area in tenths.
C₁C₂C₃ = Concentration of thickness (C₁), 2nd thickest (C₂), and 3rd thickest (C₃).
S₁S₂S₃ = Stage of development of thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃).
-C = Stage of development of ice within weight of ships and passages.
S₀ = Thicker than S₁, but less than one term concentration.
S₄ = Stage of development having the greatest remaining concentration.

STAGES OF DEVELOPMENT (THICKNESS)

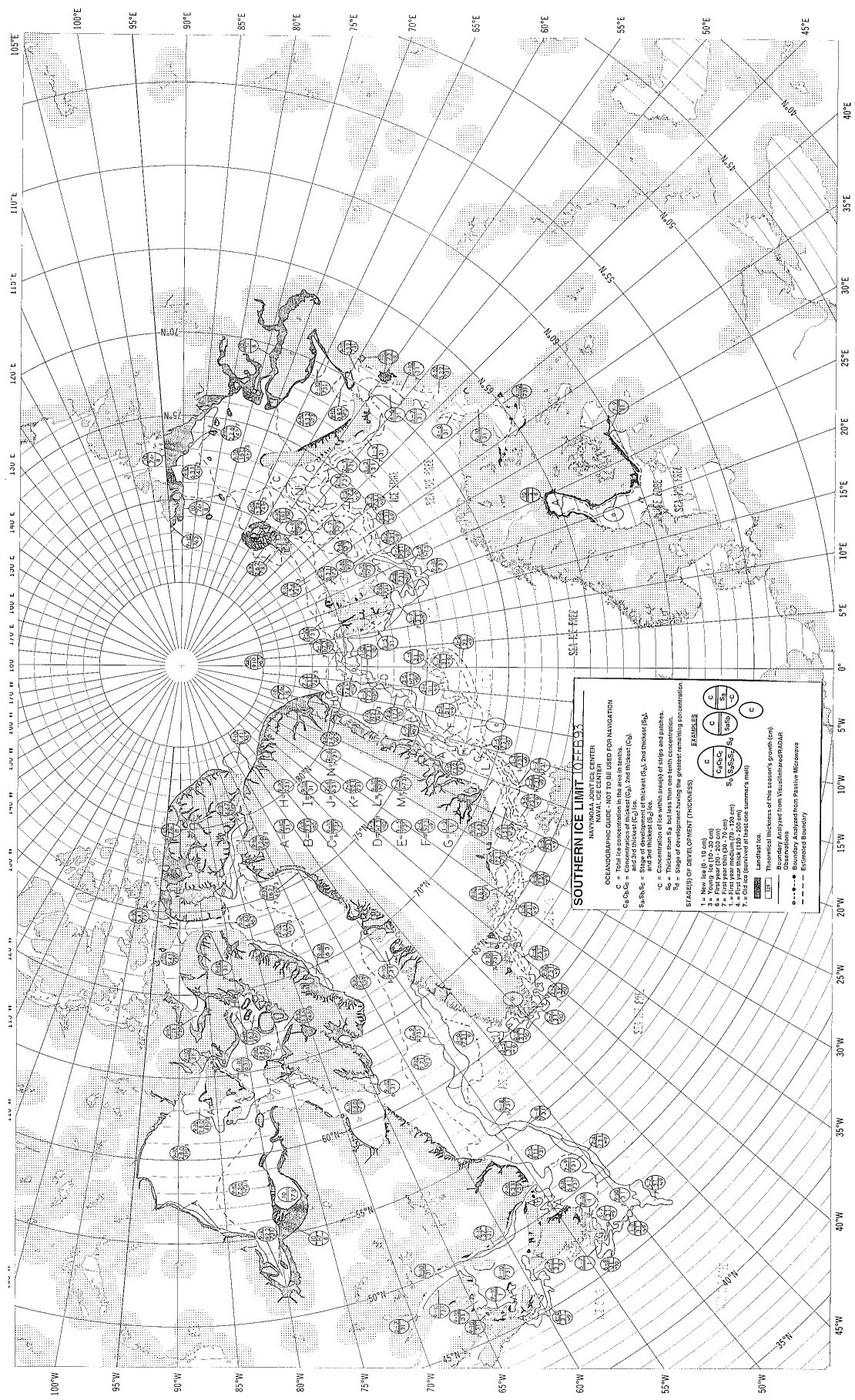
1 = New ice (0-10 cm)
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100 = First year ice (990-1000 cm)

EXAMPLES

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100 = First year ice (990-1000 cm)

Legend

Landmass
Boundary Analyzed from Visual/Infra-Red
Boundary Analyzed from Passive Microwave
Estimated Boundary



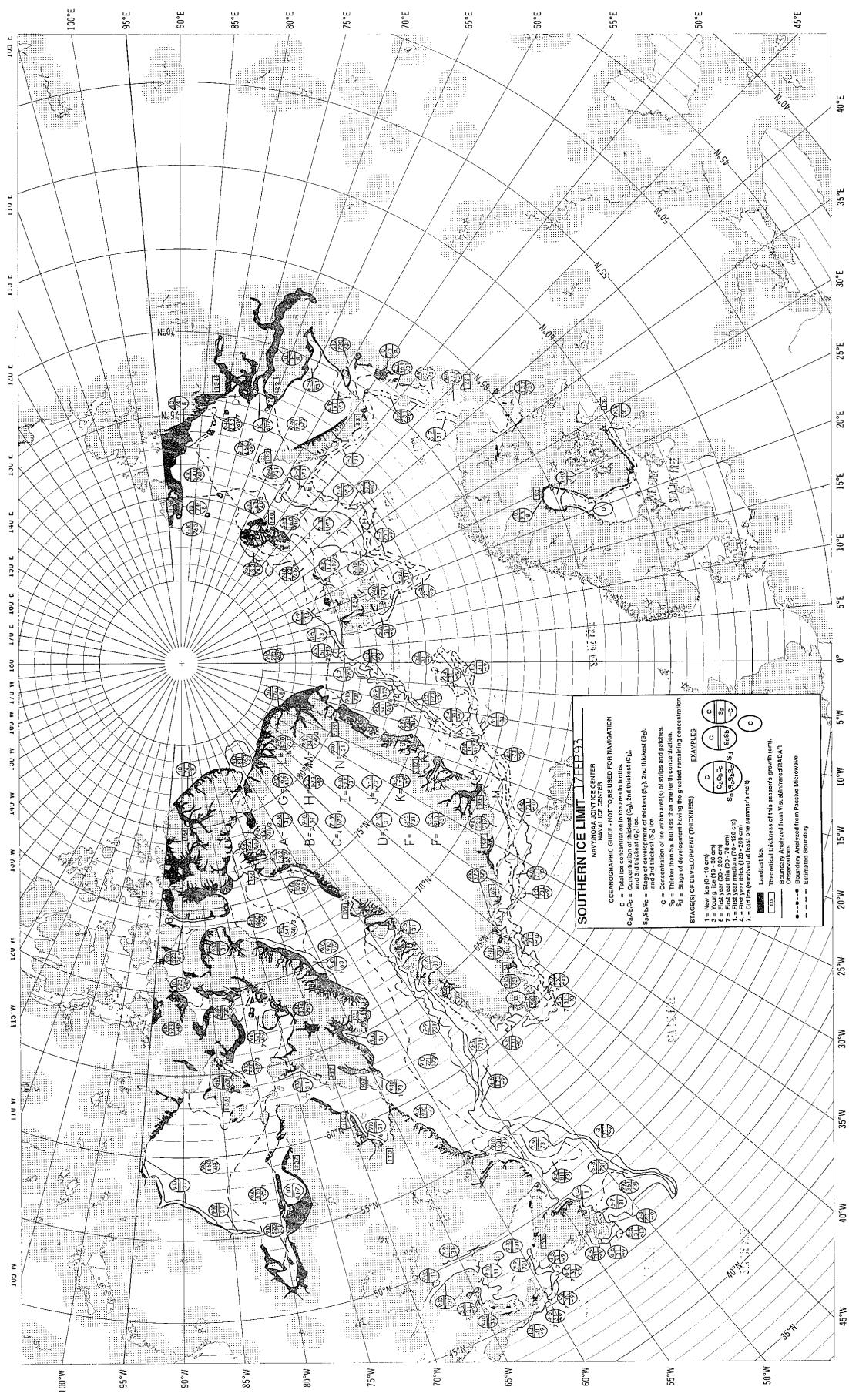
SOUTHERN ICE LIMIT 1983
 NAVY ICE CENTER
 OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

C_s, C_m, C_e = Total ice concentration in the area in tenths.
 C_s = Thin ice concentration (0-100%).
 C_m = Medium ice concentration (100-200%).
 C_e = Thick ice concentration (200-300%).
 C_{max} = Maximum ice concentration (300-400%).
 C_{min} = Minimum ice concentration (0-100%).
 C_{avg} = Average ice concentration (100-200%).
 C_{std} = Standard deviation of ice concentration (100-200%).
 C_{var} = Variance of ice concentration (100-200%).
 C_{cov} = Covariance of ice concentration (100-200%).
 C_{corr} = Correlation coefficient of ice concentration (100-200%).
 C_{reg} = Regression coefficient of ice concentration (100-200%).
 C_{res} = Residual of ice concentration (100-200%).
 C_{err} = Error of ice concentration (100-200%).
 C_{tot} = Total error of ice concentration (100-200%).
 C_{net} = Net ice concentration (100-200%).
 C_{gross} = Gross ice concentration (100-200%).
 C_{usable} = Usable ice concentration (100-200%).
 $C_{unusable}$ = Unusable ice concentration (100-200%).
 C_{ice} = Ice concentration (100-200%).
 C_{water} = Water concentration (100-200%).
 C_{land} = Land concentration (100-200%).
 C_{atm} = Atmosphere concentration (100-200%).
 C_{ocean} = Ocean concentration (100-200%).
 C_{ice} = Ice concentration (100-200%).
 C_{water} = Water concentration (100-200%).
 C_{land} = Land concentration (100-200%).
 C_{atm} = Atmosphere concentration (100-200%).
 C_{ocean} = Ocean concentration (100-200%).

STAGES OF DEVELOPMENT (THICKNESS)
 1 = First year ice (0-100 cm)
 2 = Second year ice (100-200 cm)
 3 = Third year ice (200-300 cm)
 4 = Fourth year ice (300-400 cm)
 5 = Fifth year ice (400-500 cm)
 6 = Sixth year ice (500-600 cm)
 7 = Old ice (600-700 cm)
 8 = Very old ice (700-800 cm)
 9 = Oldest ice (800-900 cm)
 10 = Ice that has survived at least one summer's melt

EXAMPLES
 (1) $\frac{C_s}{C_m} = \frac{100}{200}$
 (2) $\frac{C_s}{C_m} = \frac{100}{200}$
 (3) $\frac{C_s}{C_m} = \frac{100}{200}$
 (4) $\frac{C_s}{C_m} = \frac{100}{200}$
 (5) $\frac{C_s}{C_m} = \frac{100}{200}$
 (6) $\frac{C_s}{C_m} = \frac{100}{200}$
 (7) $\frac{C_s}{C_m} = \frac{100}{200}$
 (8) $\frac{C_s}{C_m} = \frac{100}{200}$
 (9) $\frac{C_s}{C_m} = \frac{100}{200}$
 (10) $\frac{C_s}{C_m} = \frac{100}{200}$

Legend
 - - - - - Landfast ice
 - - - - - Theoretical thickness of this season's growth (cm)
 - - - - - Boundary Analyzed from VisulimaregRadar
 - - - - - Boundary Analyzed from Passive Microwave
 - - - - - Estimated Boundary



SOUTHERN ICE LIMIT - FEBRUARY
 NAVYAL CENTER
 NAVAL ICE CENTER

OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

C = Total ice concentration in the area in tenths.
 C_{0.5}-C_{1.5} = Range of development of thickest (C_{0.5}), 2nd thickest (C_{1.5}), and 3rd thickest (C_{1.5}) ice.
 S_{0.5}-S_{1.5} = Range of development of thickest (S_{0.5}), 2nd thickest (S_{1.5}), and 3rd thickest (S_{1.5}) ice.
 S₀ = Concentration of ice within area(s) of stripes and patches.
 S₀ = Thicker than S₀, but less than one tenth concentration.
 S₀ = Stages of development having the greatest remaining concentration.

STAGES OF DEVELOPMENT (THICKNESS)

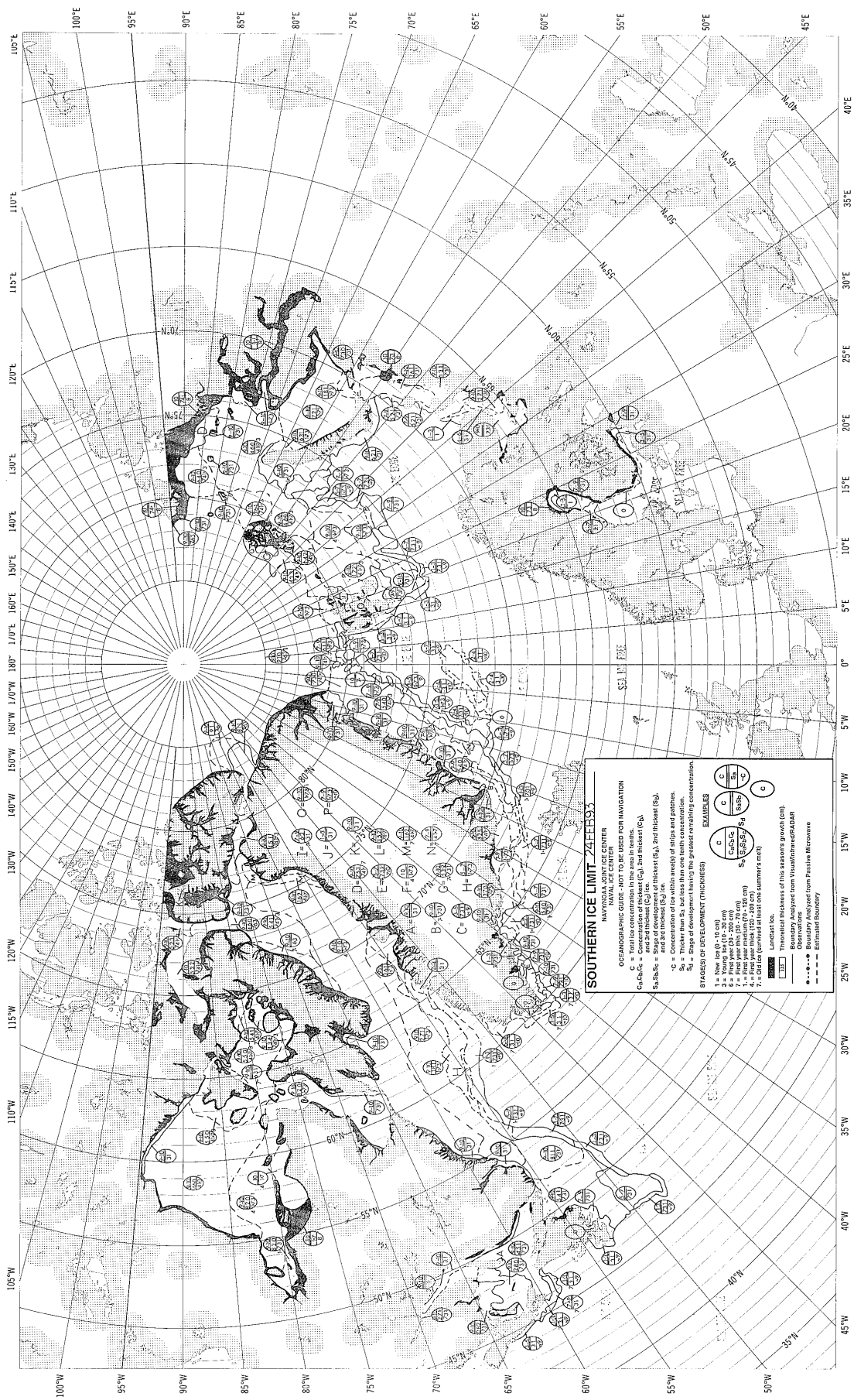
1 = New ice (0-10 cm)
 2 = First year (10-20 cm)
 3 = First year (20-30 cm)
 4 = First year (30-40 cm)
 5 = First year (40-50 cm)
 6 = First year (50-60 cm)
 7 = Old ice (60-70 cm)
 8 = Old ice (70-80 cm)
 9 = Old ice (80-90 cm)
 10 = Old ice (90-100 cm)

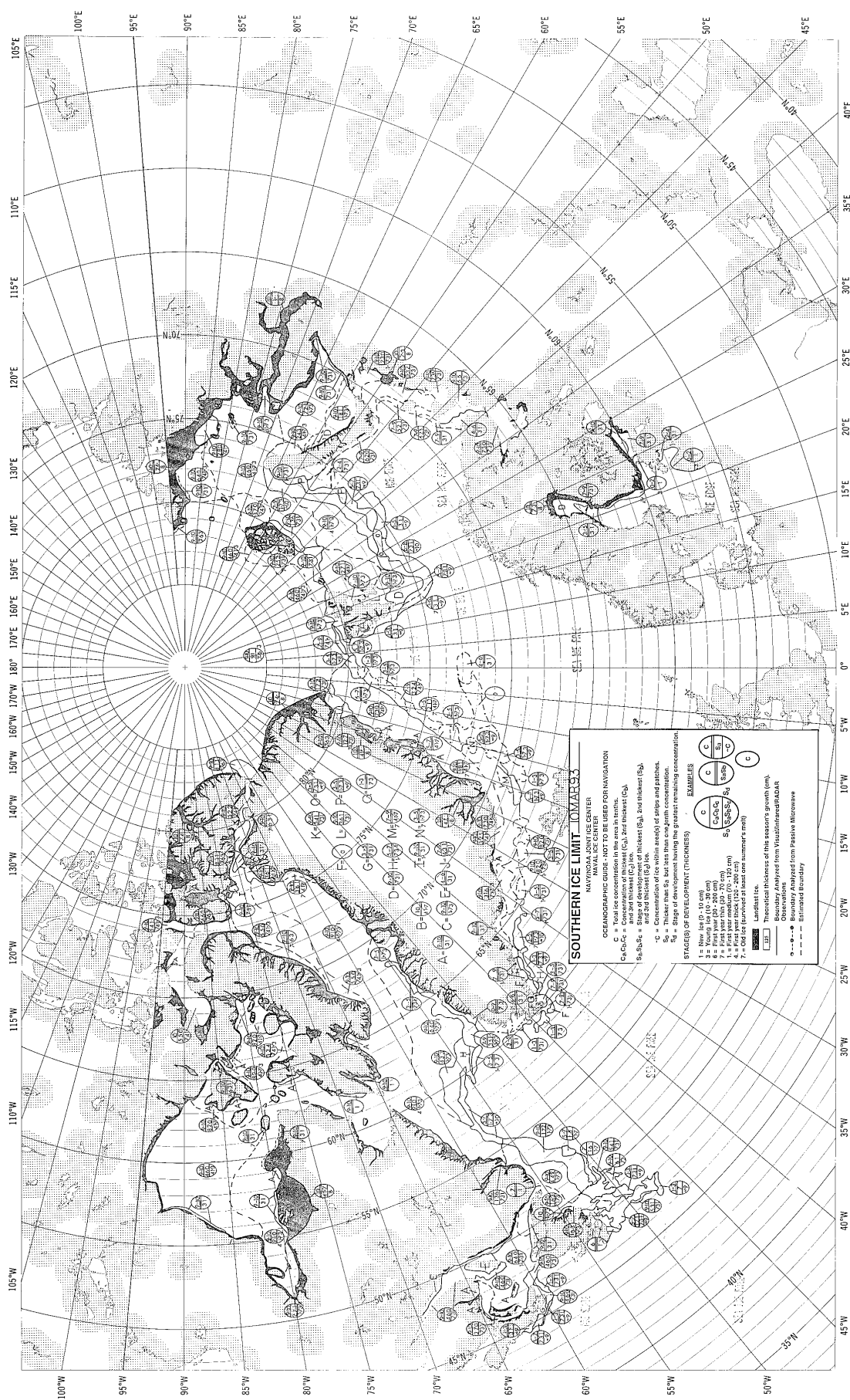
EXAMPLES

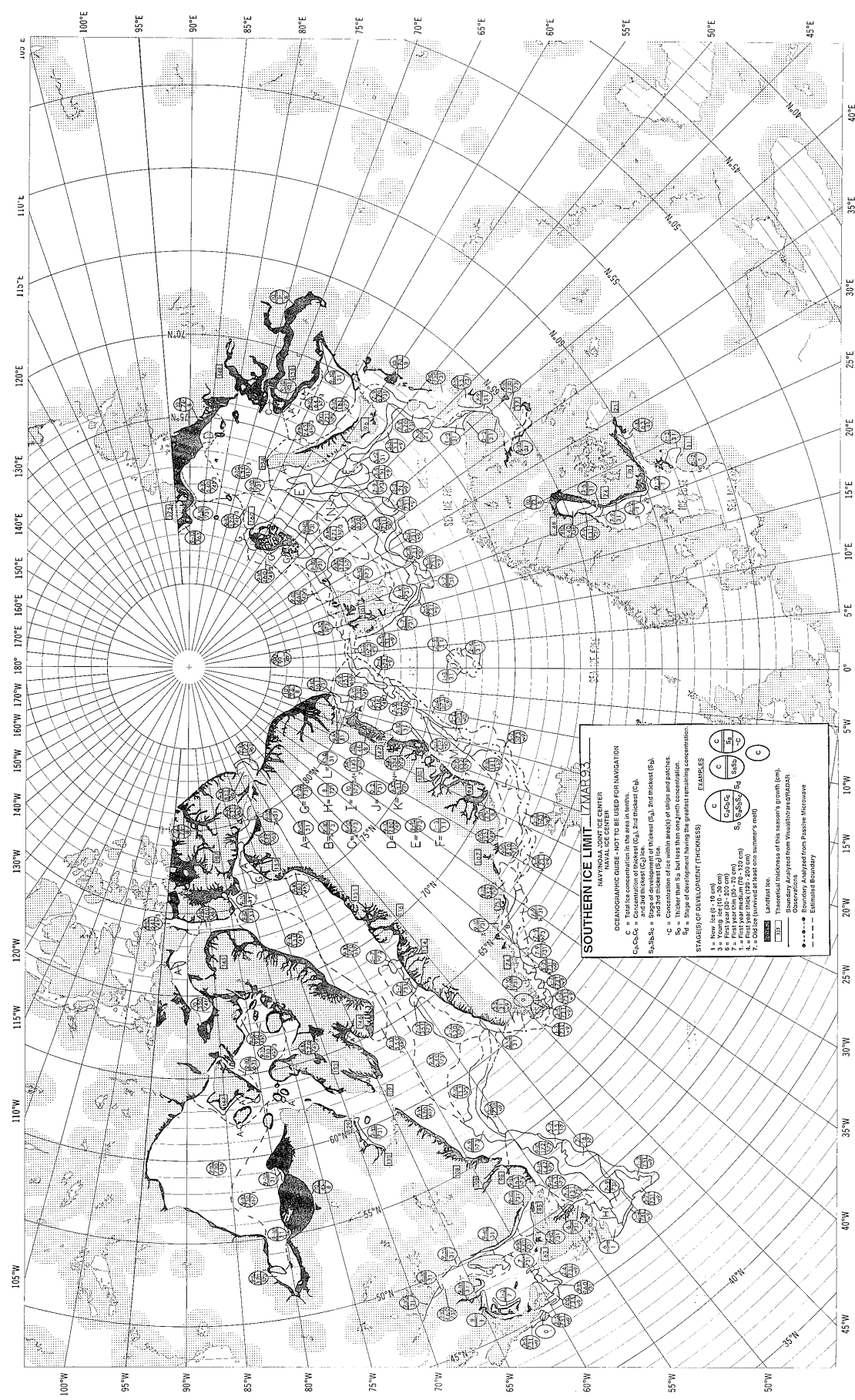
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 6 = First year (50-60 cm)
 7 = Old ice (60-70 cm)
 8 = Old ice (70-80 cm)
 9 = Old ice (80-90 cm)
 10 = Old ice (90-100 cm)

LEGEND

Landmass
 Theoretical thickness of this season's growth (cm)
 Boundary Analyzed from Visual Observations
 Boundary Analyzed from Passive Microwave
 Estimated Boundary







SOUTHERN ICE LIMIT - 7 MAR 53
 NAVY/NOAA JOINT ICE CENTER
 NAVAL ICE CENTER

OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

Legend:

- C** = Concentration of thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃) ice
- R₁, R₂, R₃** = Stages of development having the greatest remaining concentration
- C** = Concentration of ice within areas of drops and patches
- R₁** = Stage of development having the greatest remaining concentration

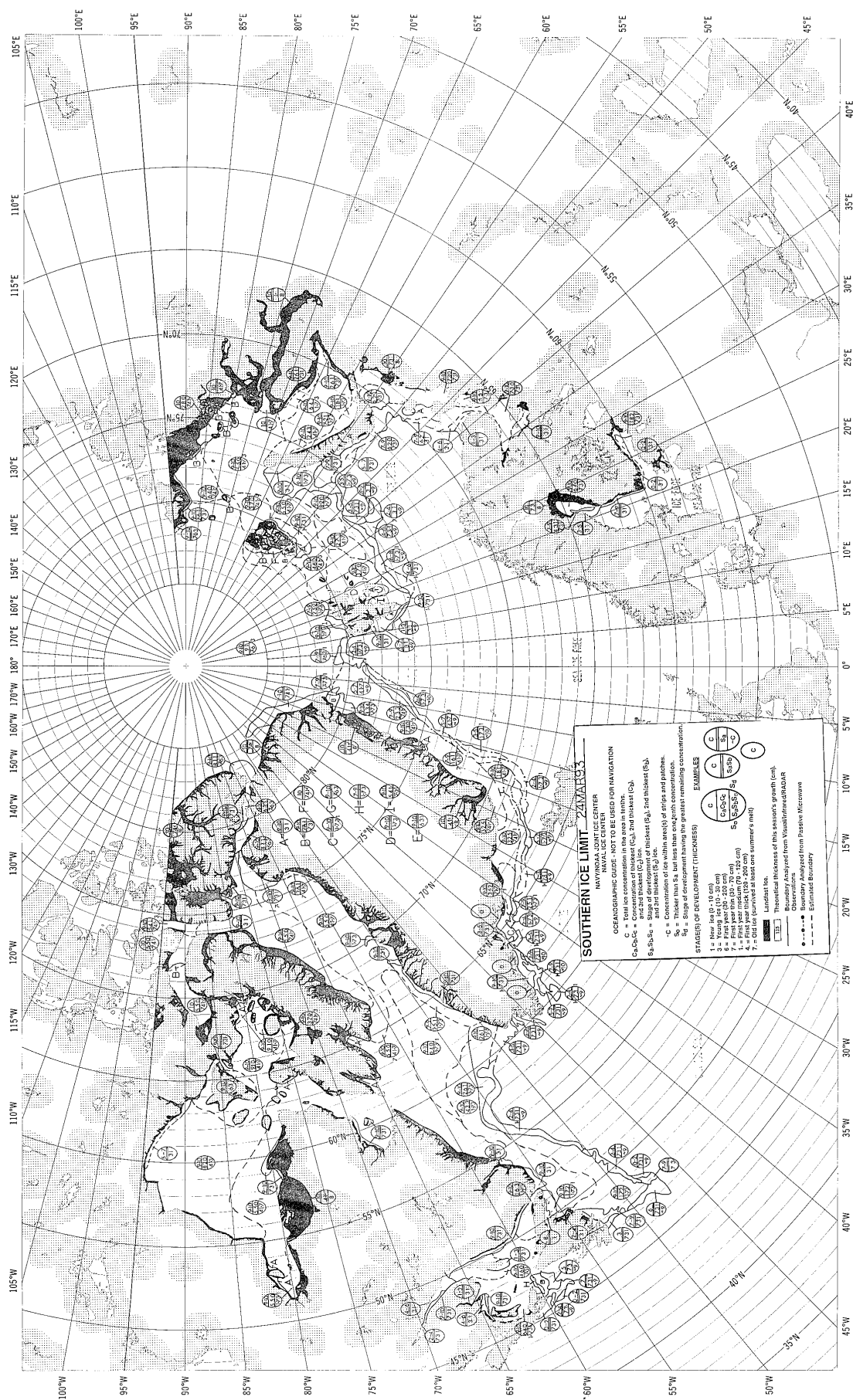
STAGES OF DEVELOPMENT (THICKNESS)

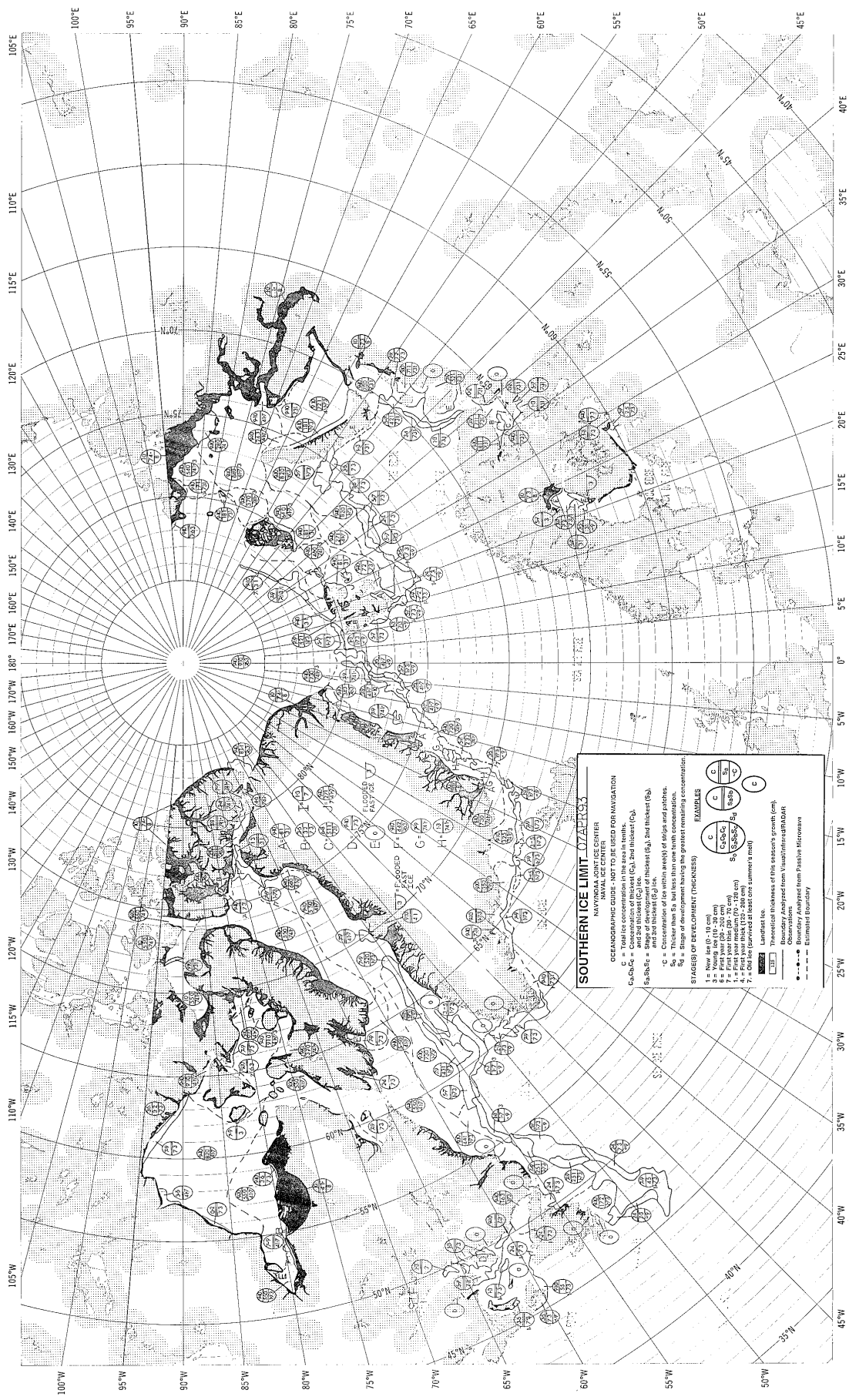
EXAMPLES

1 = New Ice (0 - 10 cm)
 2 = Young Ice (10 - 30 cm)
 3 = First year ice (30 - 70 cm)
 4 = First year ice (70 - 100 cm)
 5 = First year ice (100 - 150 cm)
 6 = First year ice (150 - 200 cm)
 7 = Old Ice (200+ cm)

Legend:

- Landfast ice**
- Thickness**
- Thickness of this season's growth (cm)**
- Thickness analyzed from Visual and Gravitational**
- Observations**
- Boundary Analyzed from Passive Microwave**
- Estimated Boundary**





SOUTHERN ICE LIMIT 07A193
 NAVY/NOAA JOINT ICE CENTER
 OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

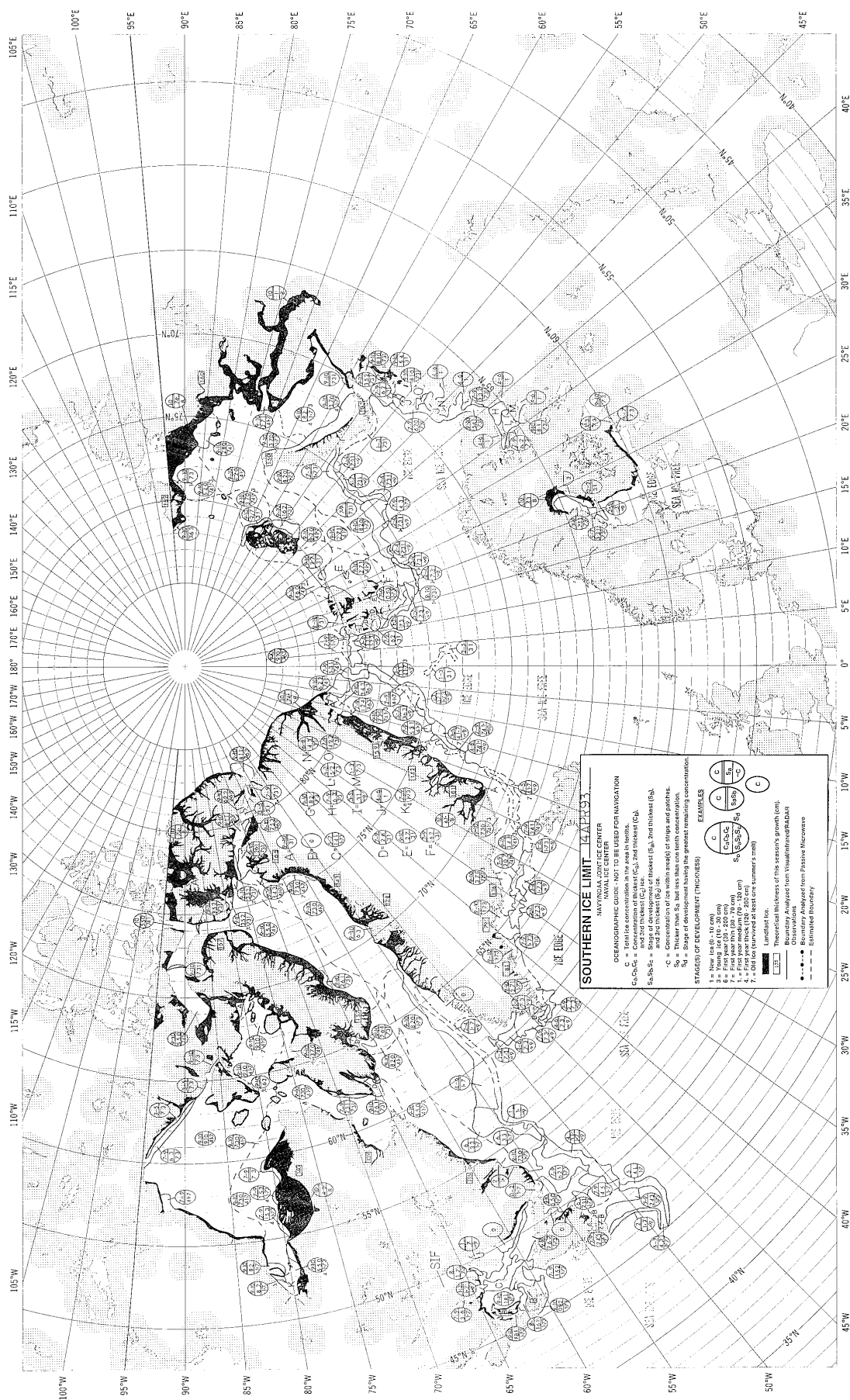
C = Total ice concentration in the area in tenths.
C₁C₂C₃ = Concentration of thickest (C₁), 2nd thickest (C₂), and thickest (C₃) ice in tenths.
S₁S₂S₃ = Stage of development of thickest (S₁), 2nd thickest (S₂), and thickest (S₃) ice in tenths.
C = Concentration of ice in tenths.
S₁ = Thicker than S₂, but less than one tenth concentration.
S₂ = Stage of development having the greatest remaining concentration.

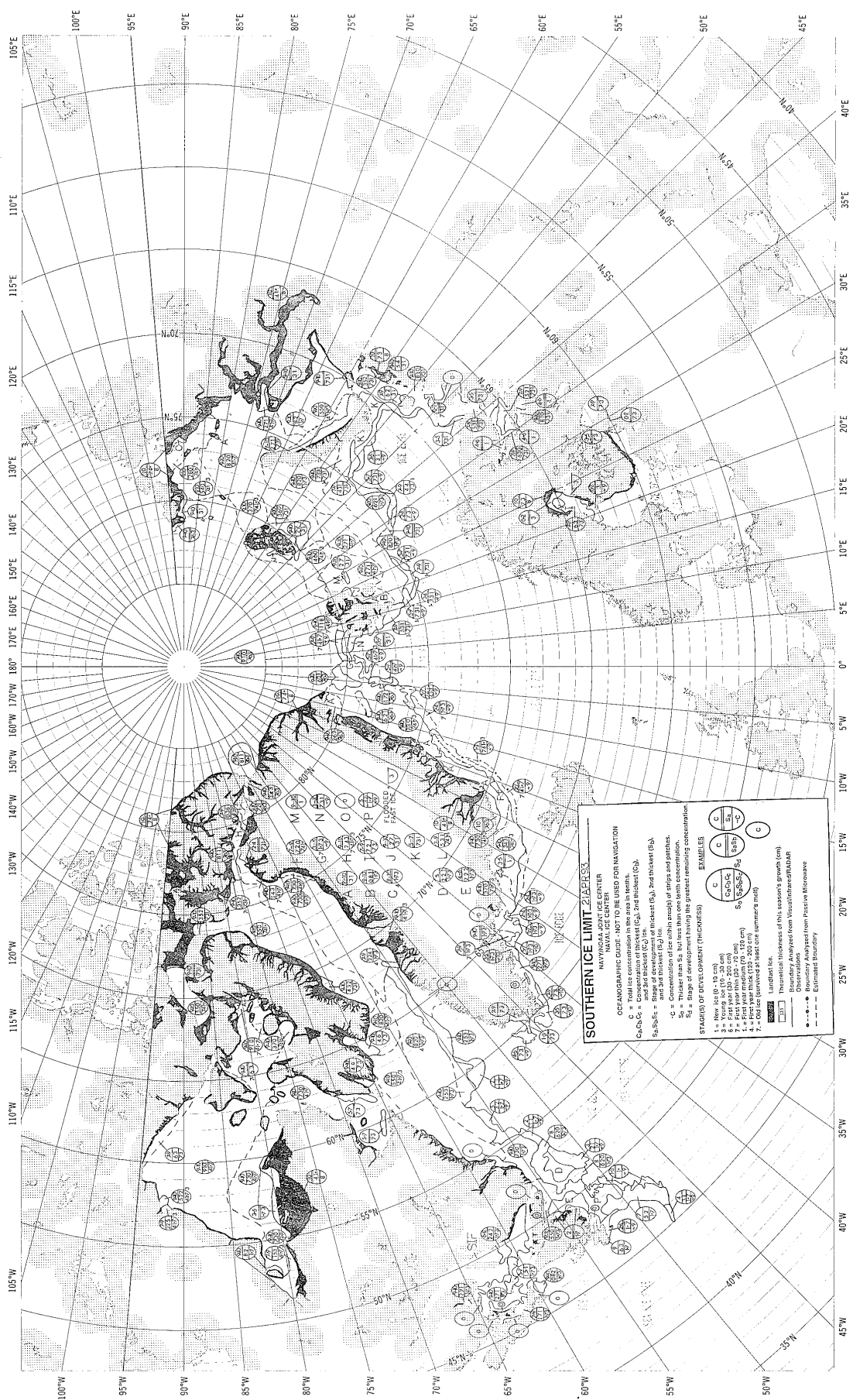
STAGES OF DEVELOPMENT (THICKNESS)

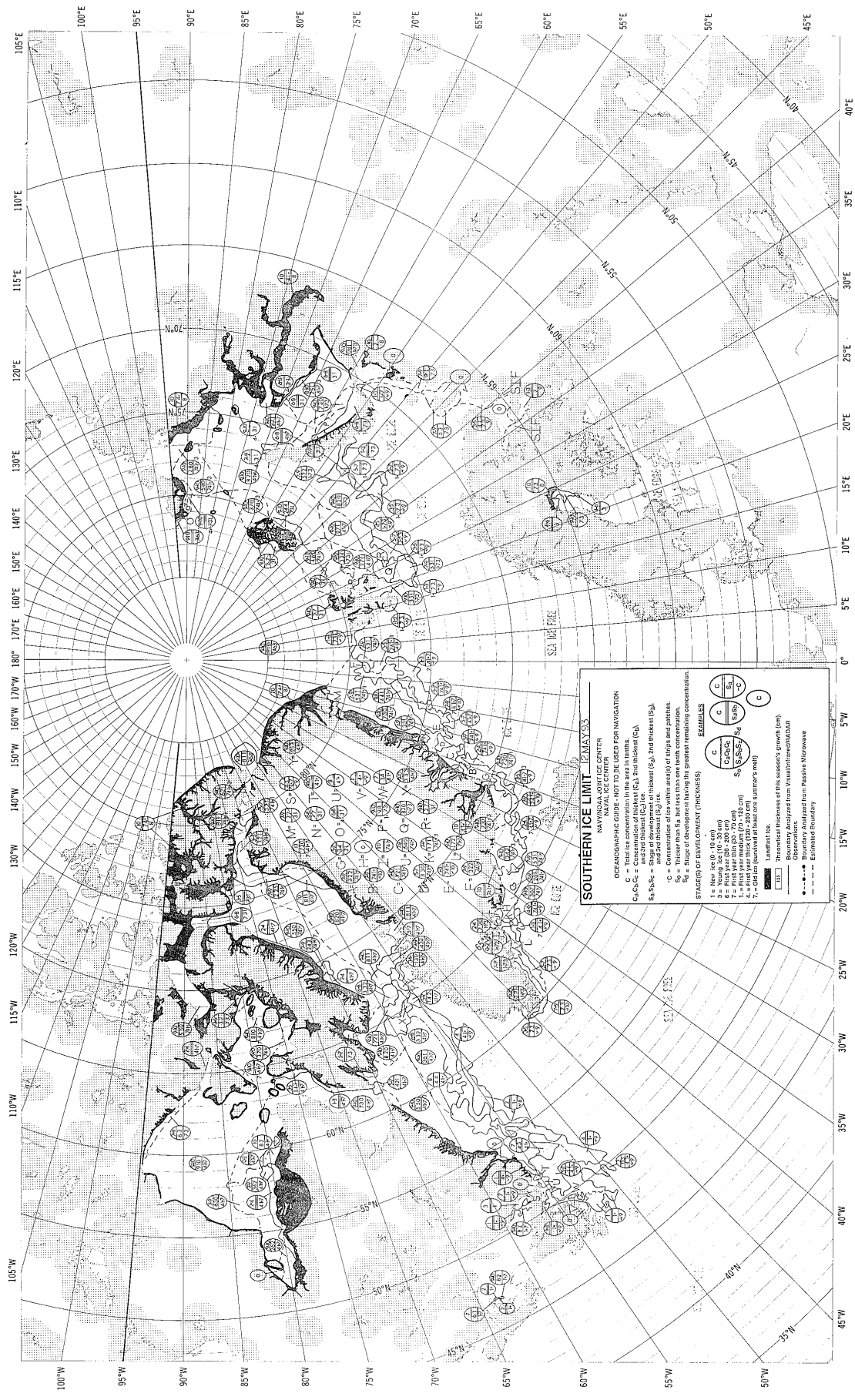
EXAMPLES

1 = New ice (0 - 10 cm)
 2 = First year ice (10 - 200 cm)
 3 = First year ice (200 - 300 cm)
 4 = First year ice (300 - 400 cm)
 5 = First year ice (400 - 500 cm)
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 100 = First year ice (9900 - 10000 cm)

Legend:
 - - - - - Estimated Boundary
 - - - - - Boundary Analyzed from Visual Observations
 - - - - - Boundary Analyzed from Passive Microwave







SOUTHERN ICE LIMIT - MAY 1953
 NAVY AND NAVAL CENTER
 NAVAL ICE CENTER

OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

C = Total ice concentration in the area in tenths.
 C₀, C₁, C₂ = Concentration of ice in tenths (C₀ = 0, C₁ = 10, C₂ = 20, etc.)
 S₀, S₁, S₂ = Range of development of thickest (S₀) and thickest (S₁)
 S₂ = Thickest (S₂)

STAGES OF DEVELOPMENT (THICKNESS)

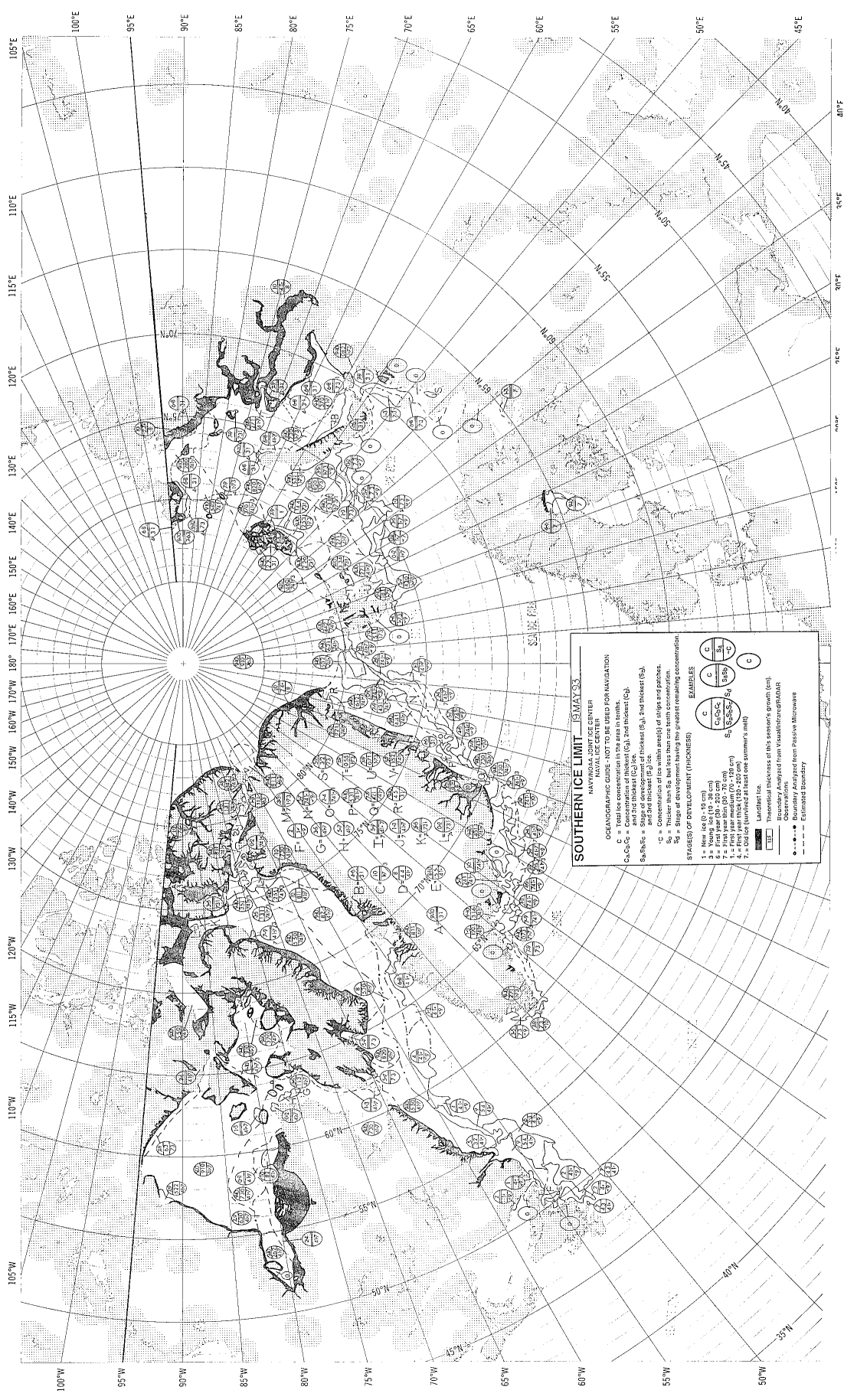
1 = New ice (0 - 10 cm)
 2 = First year (10 - 200 cm)
 3 = First year (200 - 300 cm)
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EXAMPLES

1. New ice (0 - 10 cm)
 2. First year (10 - 200 cm)
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Legend:

- Landmass
- Theoretical thickness of this season's growth (cm)
- Boundary Analyzed from Visual/Meteorological
- Boundary Analyzed from Passive Microwave
- Estimated Boundary



SOUTHERN ICE LIMIT - 15 MAY 93
 NAVYAL OCEANOGRAPHIC CENTER
 NAVAL OCEANOGRAPHIC CENTER

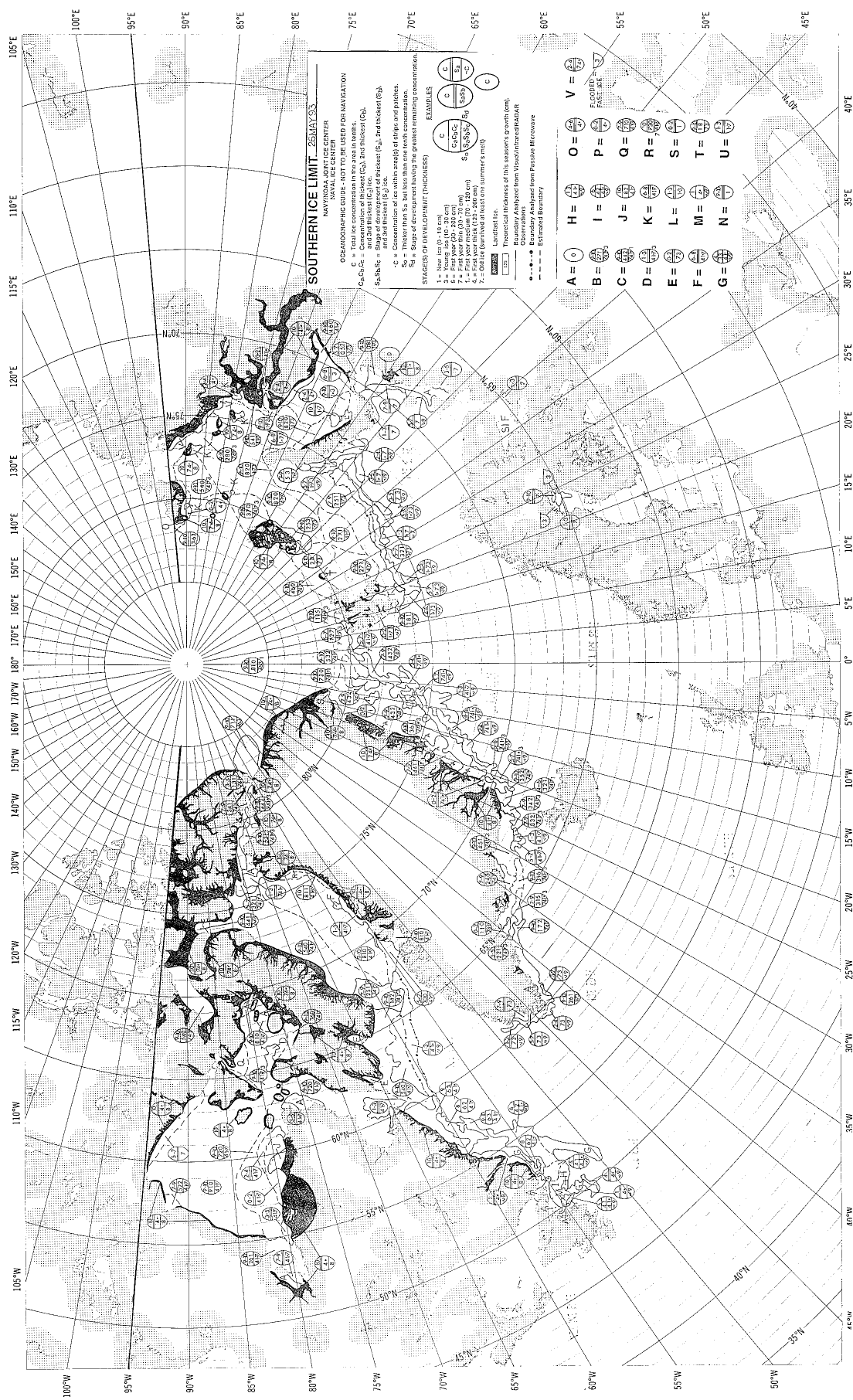
OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

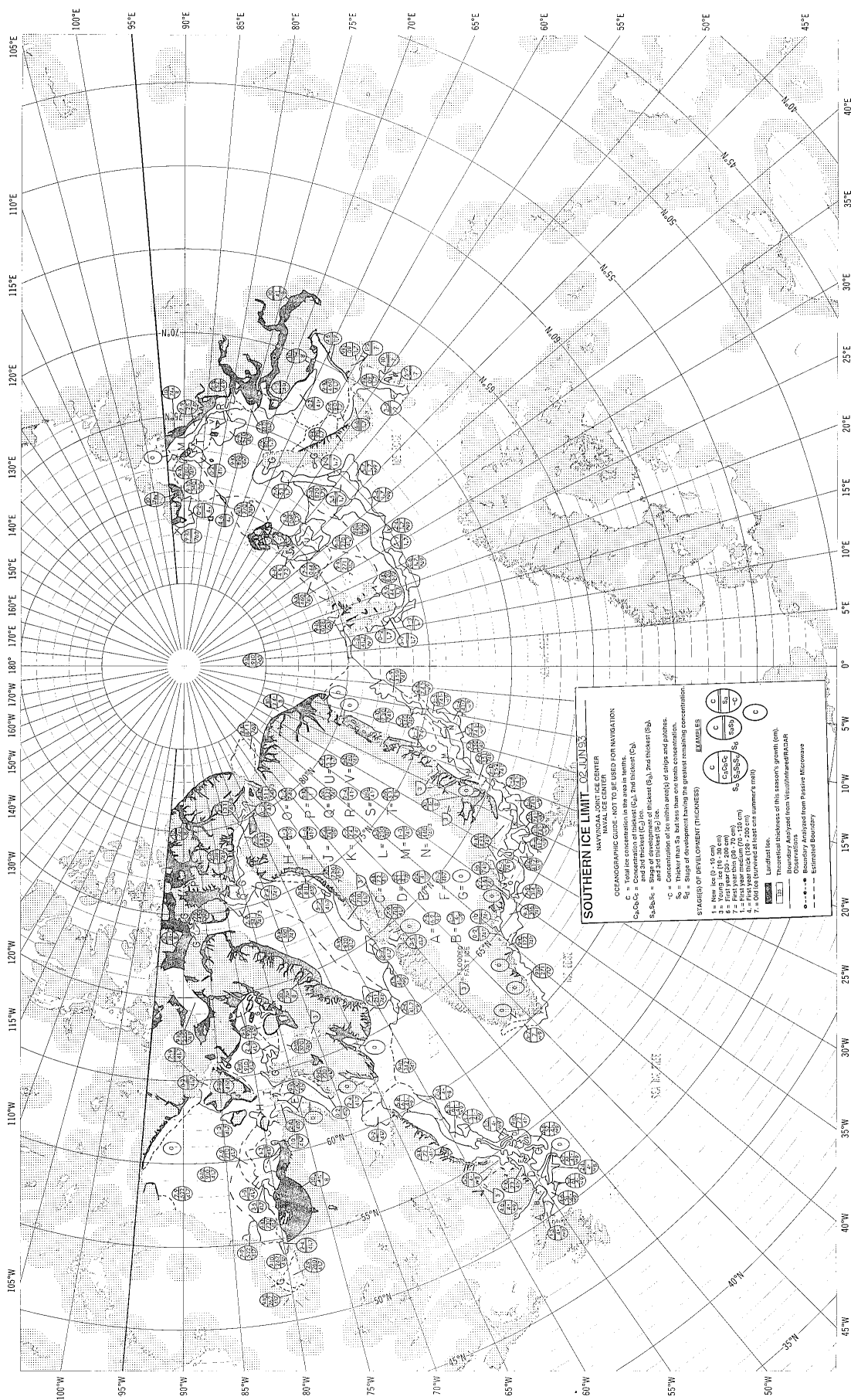
C = Total ice concentration in the area in tenths.
 C₁C₂C₃ = Concentration of ice in the area in tenths (C₁, C₂, and C₃ are the first, second, and third tenths of the total ice concentration).
 S₁S₂S₃S₄ = Stage of development of thickest (S₁), 2nd thickest (S₂), 3rd thickest (S₃), and 4th thickest (S₄) ice patches.
 S₁ = Thickest ice patch (S₁ is less than one tenth concentration).
 S₂ = Thicker than S₁, but less than one tenth concentration.
 S₃ = Stage of development (thickness).
 S₄ = Stage of development (thickness).

EXAMPLES

1 = New ice (0-10 cm)	C ₁ C ₂ C ₃	S ₁
2 = First year ice (10-20 cm)	C ₁ C ₂ C ₃	S ₂
3 = First year ice (20-30 cm)	C ₁ C ₂ C ₃	S ₃
4 = First year ice (30-40 cm)	C ₁ C ₂ C ₃	S ₄
5 = First year ice (40-50 cm)	C ₁ C ₂ C ₃	S ₅
6 = First year ice (50-60 cm)	C ₁ C ₂ C ₃	S ₆
7 = First year ice (60-70 cm)	C ₁ C ₂ C ₃	S ₇
8 = First year ice (70-80 cm)	C ₁ C ₂ C ₃	S ₈
9 = First year ice (80-90 cm)	C ₁ C ₂ C ₃	S ₉
10 = First year ice (90-100 cm)	C ₁ C ₂ C ₃	S ₁₀
11 = Second year ice (100-110 cm)	C ₁ C ₂ C ₃	S ₁₁
12 = Second year ice (110-120 cm)	C ₁ C ₂ C ₃	S ₁₂
13 = Second year ice (120-130 cm)	C ₁ C ₂ C ₃	S ₁₃
14 = Second year ice (130-140 cm)	C ₁ C ₂ C ₃	S ₁₄
15 = Second year ice (140-150 cm)	C ₁ C ₂ C ₃	S ₁₅
16 = Second year ice (150-160 cm)	C ₁ C ₂ C ₃	S ₁₆
17 = Second year ice (160-170 cm)	C ₁ C ₂ C ₃	S ₁₇
18 = Second year ice (170-180 cm)	C ₁ C ₂ C ₃	S ₁₈
19 = Second year ice (180-190 cm)	C ₁ C ₂ C ₃	S ₁₉
20 = Second year ice (190-200 cm)	C ₁ C ₂ C ₃	S ₂₀
21 = Third year ice (200-210 cm)	C ₁ C ₂ C ₃	S ₂₁
22 = Third year ice (210-220 cm)	C ₁ C ₂ C ₃	S ₂₂
23 = Third year ice (220-230 cm)	C ₁ C ₂ C ₃	S ₂₃
24 = Third year ice (230-240 cm)	C ₁ C ₂ C ₃	S ₂₄
25 = Third year ice (240-250 cm)	C ₁ C ₂ C ₃	S ₂₅
26 = Third year ice (250-260 cm)	C ₁ C ₂ C ₃	S ₂₆
27 = Third year ice (260-270 cm)	C ₁ C ₂ C ₃	S ₂₇
28 = Third year ice (270-280 cm)	C ₁ C ₂ C ₃	S ₂₈
29 = Third year ice (280-290 cm)	C ₁ C ₂ C ₃	S ₂₉
30 = Third year ice (290-300 cm)	C ₁ C ₂ C ₃	S ₃₀
31 = Fourth year ice (300-310 cm)	C ₁ C ₂ C ₃	S ₃₁
32 = Fourth year ice (310-320 cm)	C ₁ C ₂ C ₃	S ₃₂
33 = Fourth year ice (320-330 cm)	C ₁ C ₂ C ₃	S ₃₃
34 = Fourth year ice (330-340 cm)	C ₁ C ₂ C ₃	S ₃₄
35 = Fourth year ice (340-350 cm)	C ₁ C ₂ C ₃	S ₃₅
36 = Fourth year ice (350-360 cm)	C ₁ C ₂ C ₃	S ₃₆
37 = Fourth year ice (360-370 cm)	C ₁ C ₂ C ₃	S ₃₇
38 = Fourth year ice (370-380 cm)	C ₁ C ₂ C ₃	S ₃₈
39 = Fourth year ice (380-390 cm)	C ₁ C ₂ C ₃	S ₃₉
40 = Fourth year ice (390-400 cm)	C ₁ C ₂ C ₃	S ₄₀
41 = Fifth year ice (400-410 cm)	C ₁ C ₂ C ₃	S ₄₁
42 = Fifth year ice (410-420 cm)	C ₁ C ₂ C ₃	S ₄₂
43 = Fifth year ice (420-430 cm)	C ₁ C ₂ C ₃	S ₄₃
44 = Fifth year ice (430-440 cm)	C ₁ C ₂ C ₃	S ₄₄
45 = Fifth year ice (440-450 cm)	C ₁ C ₂ C ₃	S ₄₅
46 = Fifth year ice (450-460 cm)	C ₁ C ₂ C ₃	S ₄₆
47 = Fifth year ice (460-470 cm)	C ₁ C ₂ C ₃	S ₄₇
48 = Fifth year ice (470-480 cm)	C ₁ C ₂ C ₃	S ₄₈
49 = Fifth year ice (480-490 cm)	C ₁ C ₂ C ₃	S ₄₉
50 = Fifth year ice (490-500 cm)	C ₁ C ₂ C ₃	S ₅₀
51 = Sixth year ice (500-510 cm)	C ₁ C ₂ C ₃	S ₅₁
52 = Sixth year ice (510-520 cm)	C ₁ C ₂ C ₃	S ₅₂
53 = Sixth year ice (520-530 cm)	C ₁ C ₂ C ₃	S ₅₃
54 = Sixth year ice (530-540 cm)	C ₁ C ₂ C ₃	S ₅₄
55 = Sixth year ice (540-550 cm)	C ₁ C ₂ C ₃	S ₅₅
56 = Sixth year ice (550-560 cm)	C ₁ C ₂ C ₃	S ₅₆
57 = Sixth year ice (560-570 cm)	C ₁ C ₂ C ₃	S ₅₇
58 = Sixth year ice (570-580 cm)	C ₁ C ₂ C ₃	S ₅₈
59 = Sixth year ice (580-590 cm)	C ₁ C ₂ C ₃	S ₅₉
60 = Sixth year ice (590-600 cm)	C ₁ C ₂ C ₃	S ₆₀
61 = Seventh year ice (600-610 cm)	C ₁ C ₂ C ₃	S ₆₁
62 = Seventh year ice (610-620 cm)	C ₁ C ₂ C ₃	S ₆₂
63 = Seventh year ice (620-630 cm)	C ₁ C ₂ C ₃	S ₆₃
64 = Seventh year ice (630-640 cm)	C ₁ C ₂ C ₃	S ₆₄
65 = Seventh year ice (640-650 cm)	C ₁ C ₂ C ₃	S ₆₅
66 = Seventh year ice (650-660 cm)	C ₁ C ₂ C ₃	S ₆₆
67 = Seventh year ice (660-670 cm)	C ₁ C ₂ C ₃	S ₆₇
68 = Seventh year ice (670-680 cm)	C ₁ C ₂ C ₃	S ₆₈
69 = Seventh year ice (680-690 cm)	C ₁ C ₂ C ₃	S ₆₉
70 = Seventh year ice (690-700 cm)	C ₁ C ₂ C ₃	S ₇₀
71 = Eighth year ice (700-710 cm)	C ₁ C ₂ C ₃	S ₇₁
72 = Eighth year ice (710-720 cm)	C ₁ C ₂ C ₃	S ₇₂
73 = Eighth year ice (720-730 cm)	C ₁ C ₂ C ₃	S ₇₃
74 = Eighth year ice (730-740 cm)	C ₁ C ₂ C ₃	S ₇₄
75 = Eighth year ice (740-750 cm)	C ₁ C ₂ C ₃	S ₇₅
76 = Eighth year ice (750-760 cm)	C ₁ C ₂ C ₃	S ₇₆
77 = Eighth year ice (760-770 cm)	C ₁ C ₂ C ₃	S ₇₇
78 = Eighth year ice (770-780 cm)	C ₁ C ₂ C ₃	S ₇₈
79 = Eighth year ice (780-790 cm)	C ₁ C ₂ C ₃	S ₇₉
80 = Eighth year ice (790-800 cm)	C ₁ C ₂ C ₃	S ₈₀
81 = Ninth year ice (800-810 cm)	C ₁ C ₂ C ₃	S ₈₁
82 = Ninth year ice (810-820 cm)	C ₁ C ₂ C ₃	S ₈₂
83 = Ninth year ice (820-830 cm)	C ₁ C ₂ C ₃	S ₈₃
84 = Ninth year ice (830-840 cm)	C ₁ C ₂ C ₃	S ₈₄
85 = Ninth year ice (840-850 cm)	C ₁ C ₂ C ₃	S ₈₅
86 = Ninth year ice (850-860 cm)	C ₁ C ₂ C ₃	S ₈₆
87 = Ninth year ice (860-870 cm)	C ₁ C ₂ C ₃	S ₈₇
88 = Ninth year ice (870-880 cm)	C ₁ C ₂ C ₃	S ₈₈
89 = Ninth year ice (880-890 cm)	C ₁ C ₂ C ₃	S ₈₉
90 = Ninth year ice (890-900 cm)	C ₁ C ₂ C ₃	S ₉₀
91 = Tenth year ice (900-910 cm)	C ₁ C ₂ C ₃	S ₉₁
92 = Tenth year ice (910-920 cm)	C ₁ C ₂ C ₃	S ₉₂
93 = Tenth year ice (920-930 cm)	C ₁ C ₂ C ₃	S ₉₃
94 = Tenth year ice (930-940 cm)	C ₁ C ₂ C ₃	S ₉₄
95 = Tenth year ice (940-950 cm)	C ₁ C ₂ C ₃	S ₉₅
96 = Tenth year ice (950-960 cm)	C ₁ C ₂ C ₃	S ₉₆
97 = Tenth year ice (960-970 cm)	C ₁ C ₂ C ₃	S ₉₇
98 = Tenth year ice (970-980 cm)	C ₁ C ₂ C ₃	S ₉₈
99 = Tenth year ice (980-990 cm)	C ₁ C ₂ C ₃	S ₉₉
100 = Tenth year ice (990-1000 cm)	C ₁ C ₂ C ₃	S ₁₀₀

Legend:
 - - - - - Landmass
 - - - - - Boundary Analyzed from Visual/Infrared Data
 - - - - - Boundary Analyzed from Passive Microwave
 - - - - - Estimated Boundary





SOUTHERN ICE LIMIT 02 JUN 93

NAVY/NOAA JOINT ICE CENTER

NAVAL ICE CENTER

IC GUIDE - NOT TO BE USED FOR NAVIGATION
 Concentration is the area in tenths.

tion of thickest (C_A), 2nd thickest (C_B),

thickest (G_2) ice.

Chest Spice.

on of ice within area(s) of strips and patches.

development having the greatest remaining concen-

EXAMPLES

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cm)
- 70 cm)

($\lambda = 120$ cm)
($\lambda = 200$ cm)

at least one summer's injury

height of this person's growth (cm).

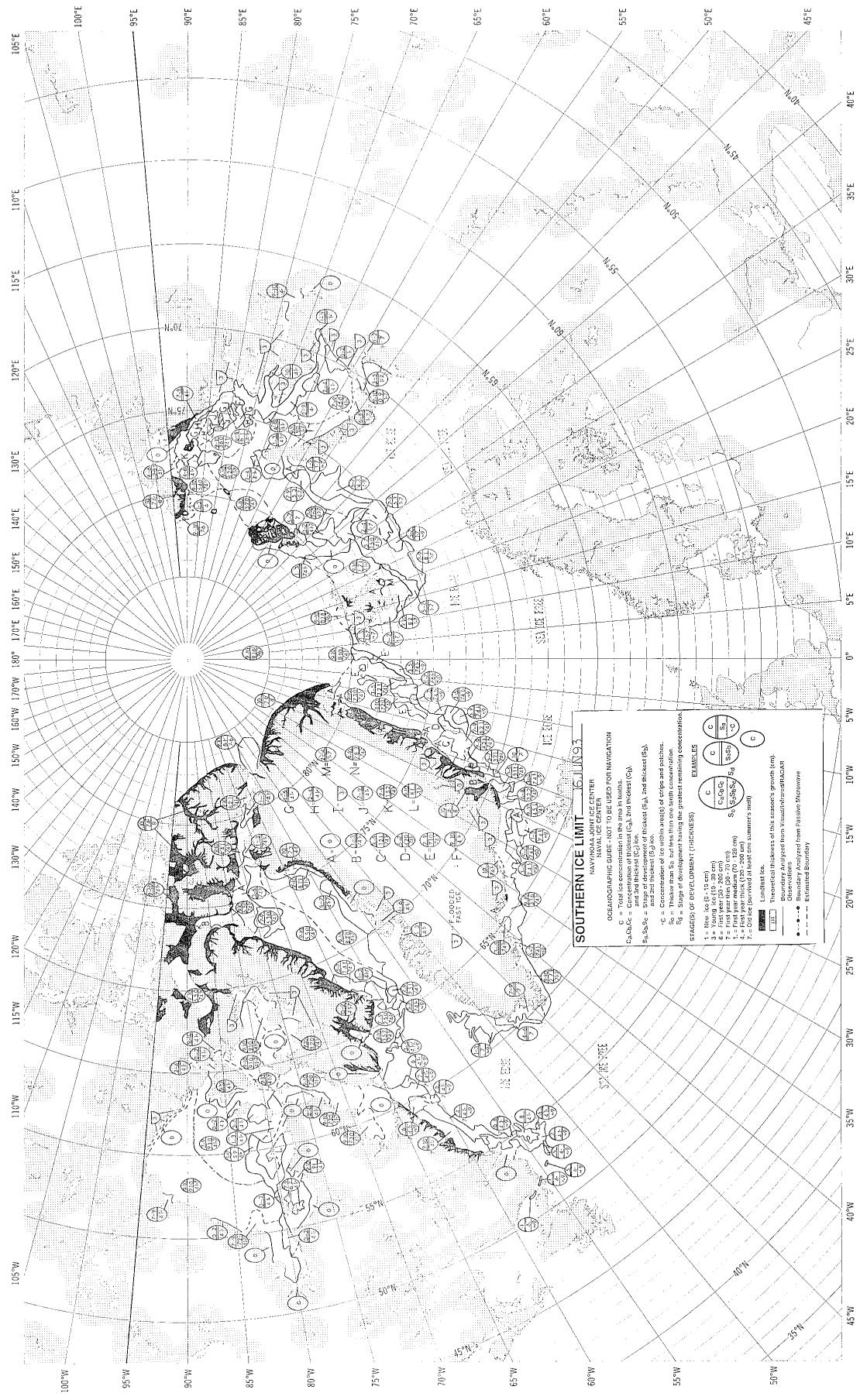
Analyzed from VisualInfrared/RADAR

ions

Boundary Analyzed from Passive Microarray

.....

$M_{0.5}$	$M_{0.01}$	$M_{0.5}$
0.0000	0.0000	0.0000
0.0001	0.0001	0.0001
0.0002	0.0002	0.0002
0.0003	0.0003	0.0003
0.0004	0.0004	0.0004
0.0005	0.0005	0.0005
0.0006	0.0006	0.0006
0.0007	0.0007	0.0007
0.0008	0.0008	0.0008
0.0009	0.0009	0.0009
0.0010	0.0010	0.0010
0.0011	0.0011	0.0011
0.0012	0.0012	0.0012
0.0013	0.0013	0.0013
0.0014	0.0014	0.0014
0.0015	0.0015	0.0015
0.0016	0.0016	0.0016
0.0017	0.0017	0.0017
0.0018	0.0018	0.0018
0.0019	0.0019	0.0019
0.0020	0.0020	0.0020
0.0021	0.0021	0.0021
0.0022	0.0022	0.0022
0.0023	0.0023	0.0023
0.0024	0.0024	0.0024
0.0025	0.0025	0.0025
0.0026	0.0026	0.0026
0.0027	0.0027	0.0027
0.0028	0.0028	0.0028
0.0029	0.0029	0.0029
0.0030	0.0030	0.0030
0.0031	0.0031	0.0031
0.0032	0.0032	0.0032
0.0033	0.0033	0.0033
0.0034	0.0034	0.0034
0.0035	0.0035	0.0035
0.0036	0.0036	0.0036
0.0037	0.0037	0.0037
0.0038	0.0038	0.0038
0.0039	0.0039	0.0039
0.0040	0.0040	0.0040
0.0041	0.0041	0.0041
0.0042	0.0042	0.0042
0.0043	0.0043	0.0043
0.0044	0.0044	0.0044
0.0045	0.0045	0.0045
0.0046	0.0046	0.0046
0.0047	0.0047	0.0047
0.0048	0.0048	0.0048
0.0049	0.0049	0.0049
0.0050	0.0050	0.0050
0.0051	0.0051	0.0051
0.0052	0.0052	0.0052
0.0053	0.0053	0.0053
0.0054	0.0054	0.0054
0.0055	0.0055	0.0055
0.0056	0.0056	0.0056
0.0057	0.0057	0.0057
0.0058	0.0058	0.0058
0.0059	0.0059	0.0059
0.0060	0.0060	0.0060
0.0061	0.0061	0.0061
0.0062	0.0062	0.0062
0.0063	0.0063	0.0063
0.0064	0.0064	0.0064
0.0065	0.0065	0.0065
0.0066	0.0066	0.0066
0.0067	0.0067	0.0067
0.0068	0.0068	0.0068
0.0069	0.0069	0.0069
0.0070	0.0070	0.0070
0.0071	0.0071	0.0071
0.0072	0.0072	0.0072
0.0073	0.0073	0.0073
0.0074	0.0074	0.0074
0.0075	0.0075	0.0075
0.0076	0.0076	0.0076
0.0077	0.0077	0.0077
0.0078	0.0078	0.0078
0.0079	0.0079	0.0079
0.0080	0.0080	0.0080
0.0081	0.0081	0.0081
0.0082	0.0082	0.0082
0.0083	0.0083	0.0083
0.0084	0.0084	0.0084
0.0085	0.0085	0.0085
0.0086	0.0086	0.0086
0.0087	0.0087	0.0087
0.0088	0.0088	0.0088
0.0089	0.0089	0.0089
0.0090	0.0090	0.0090
0.0091	0.0091	0.0091
0.0092	0.0092	0.0092
0.0093	0.0093	0.



SOUTHERN ICE LIMIT

NAVYAL ICE CENTER
OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION

STAGES OF DEVELOPMENT (THICKNESS)

1. New ice (0-15 cm)
2. Young ice (15-30 cm)
3. First year ice (30-100 cm)
4. First year medium (100-120 cm)
5. First year old (120-150 cm)
6. Old ice (150-200 cm)
7. Old ice (survived at least one summer's melt)

EXPLANATION

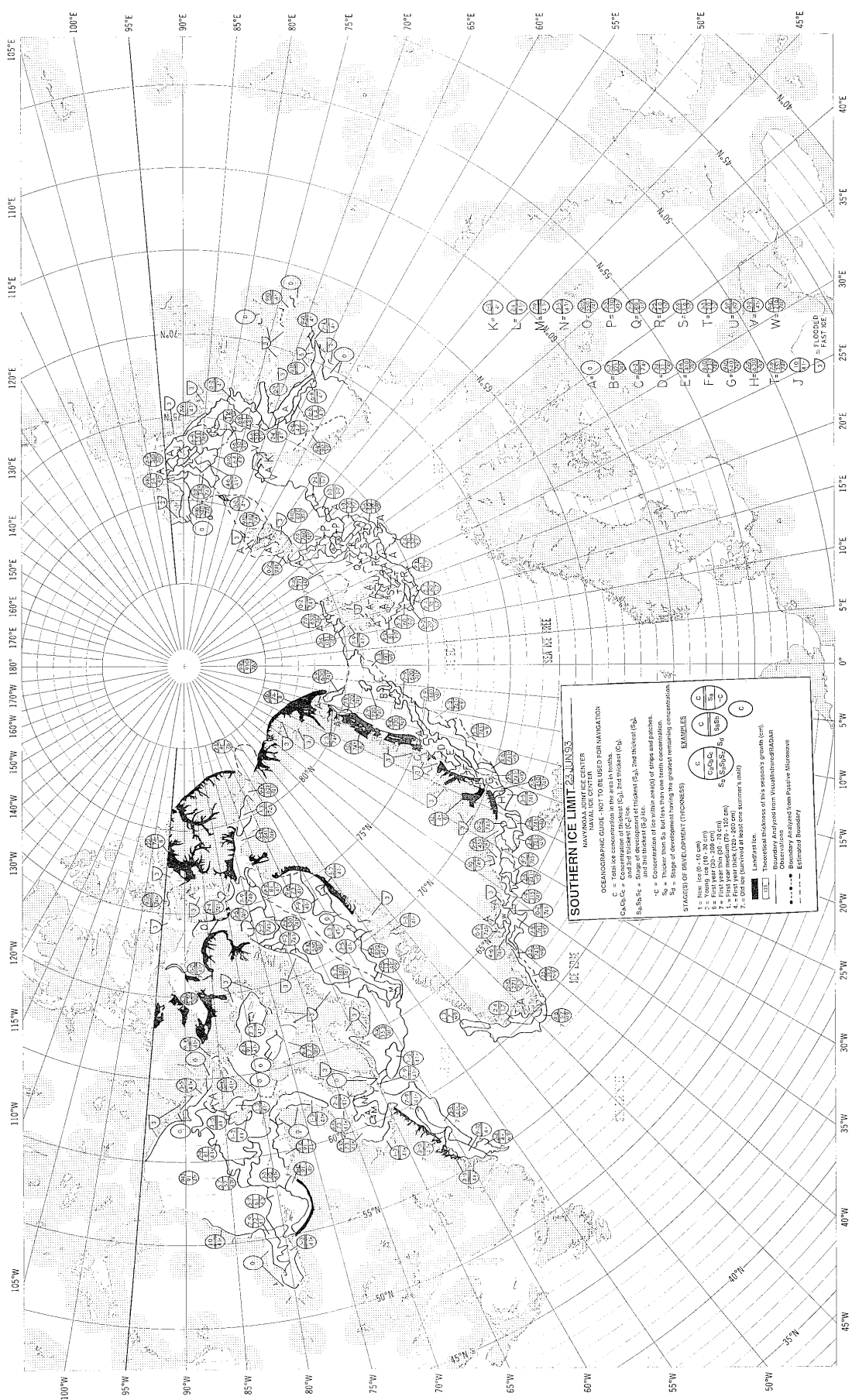
1. New ice (0-15 cm)
2. Young ice (15-30 cm)
3. First year ice (30-100 cm)
4. First year medium (100-120 cm)
5. First year old (120-150 cm)
6. Old ice (150-200 cm)
7. Old ice (survived at least one summer's melt)

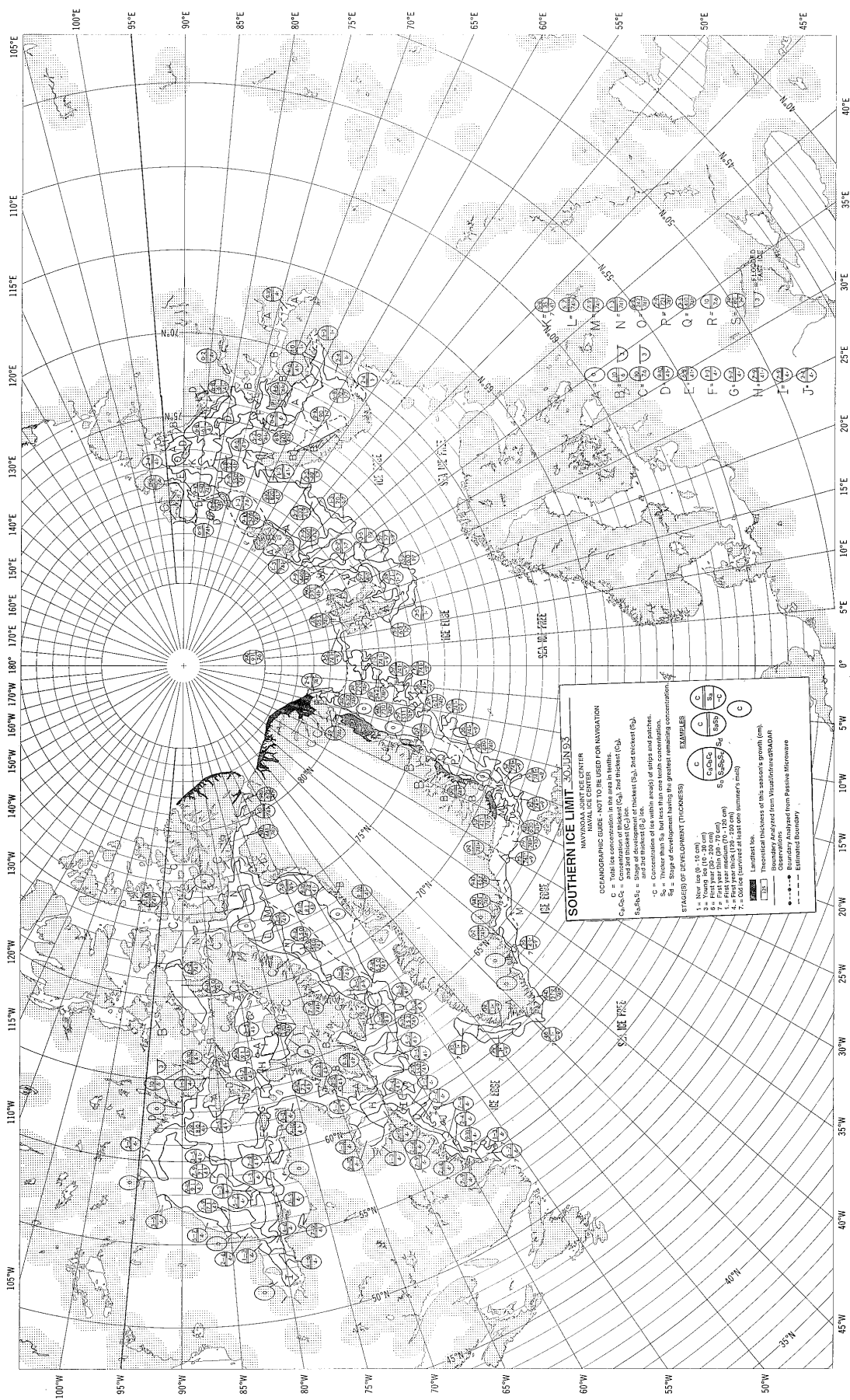
THEORETICAL THICKNESS OF THIS SEASON'S GROWTH (cm)

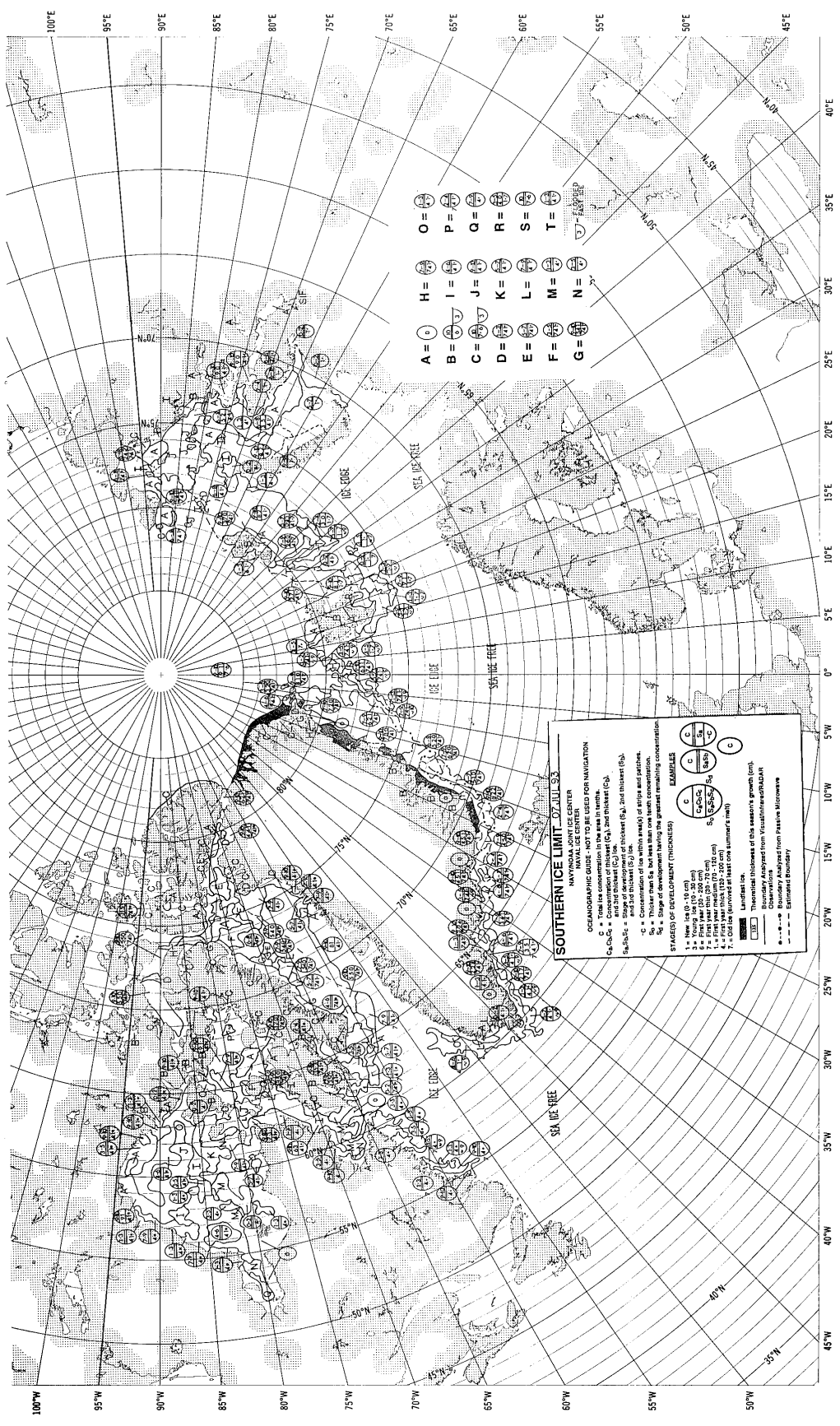
1. New ice (0-15 cm)
2. Young ice (15-30 cm)
3. First year ice (30-100 cm)
4. First year medium (100-120 cm)
5. First year old (120-150 cm)
6. Old ice (150-200 cm)
7. Old ice (survived at least one summer's melt)

BOUNDARY ANALYZED FROM PASSIVE MICROWAVE

--- Estimated Boundary

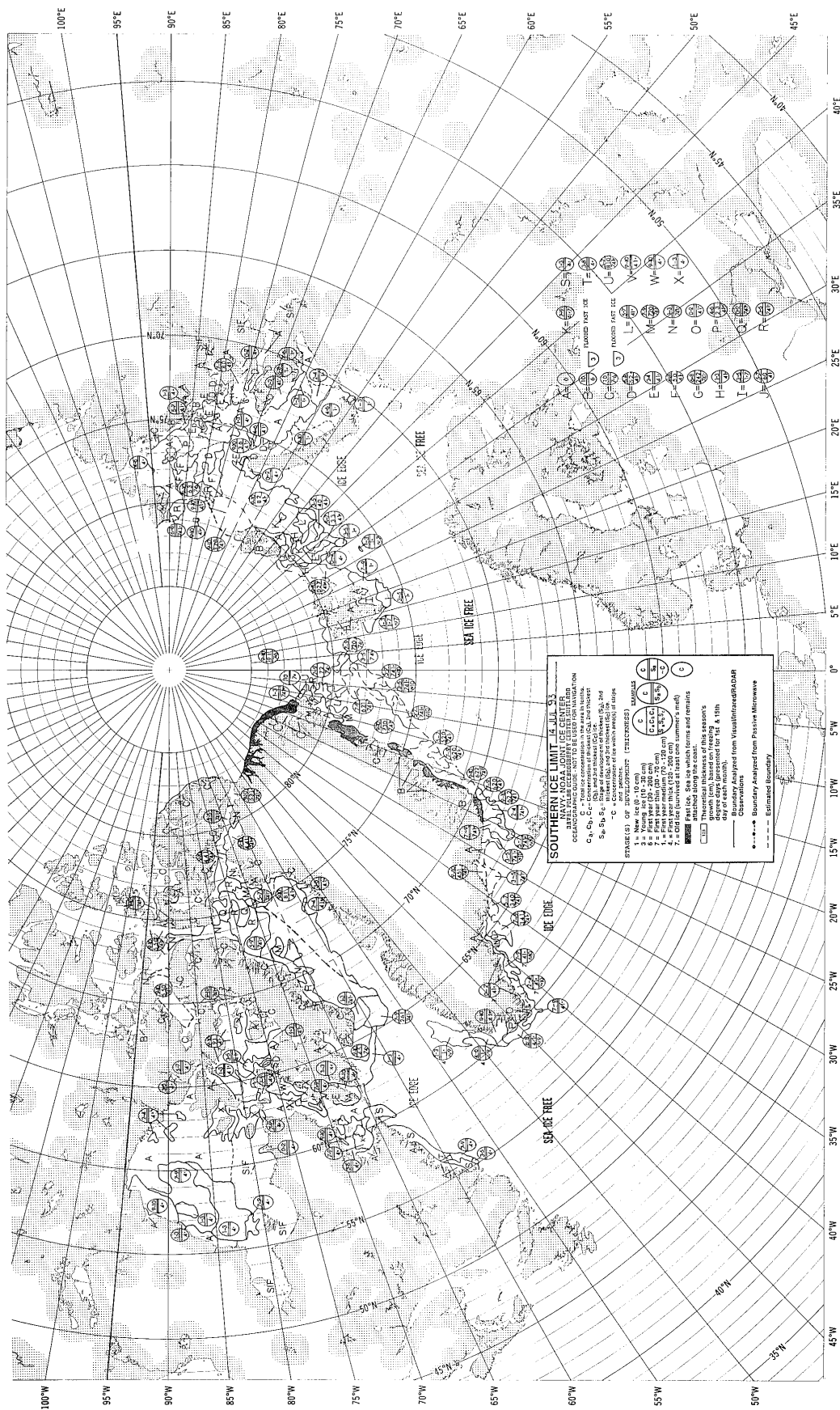


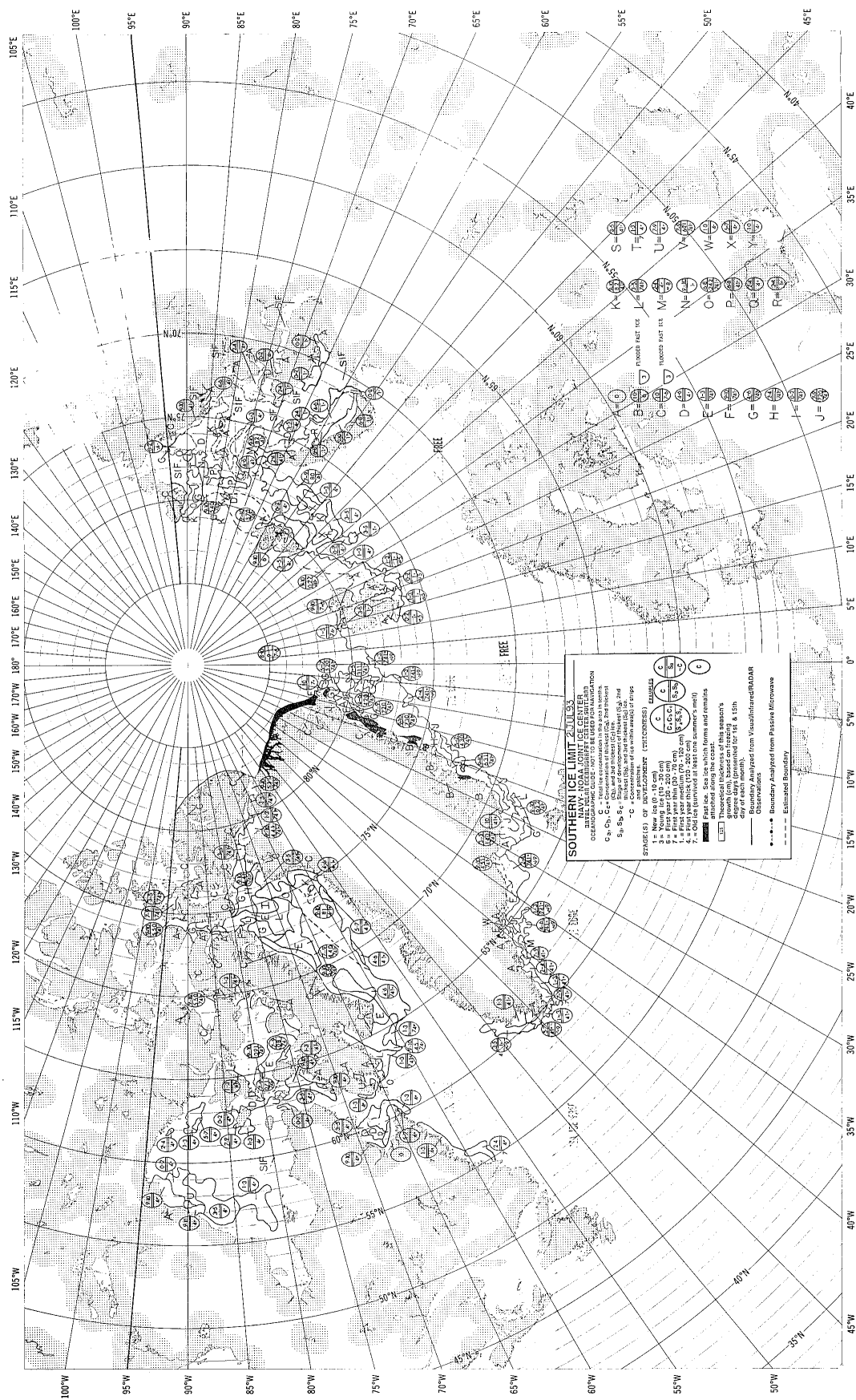


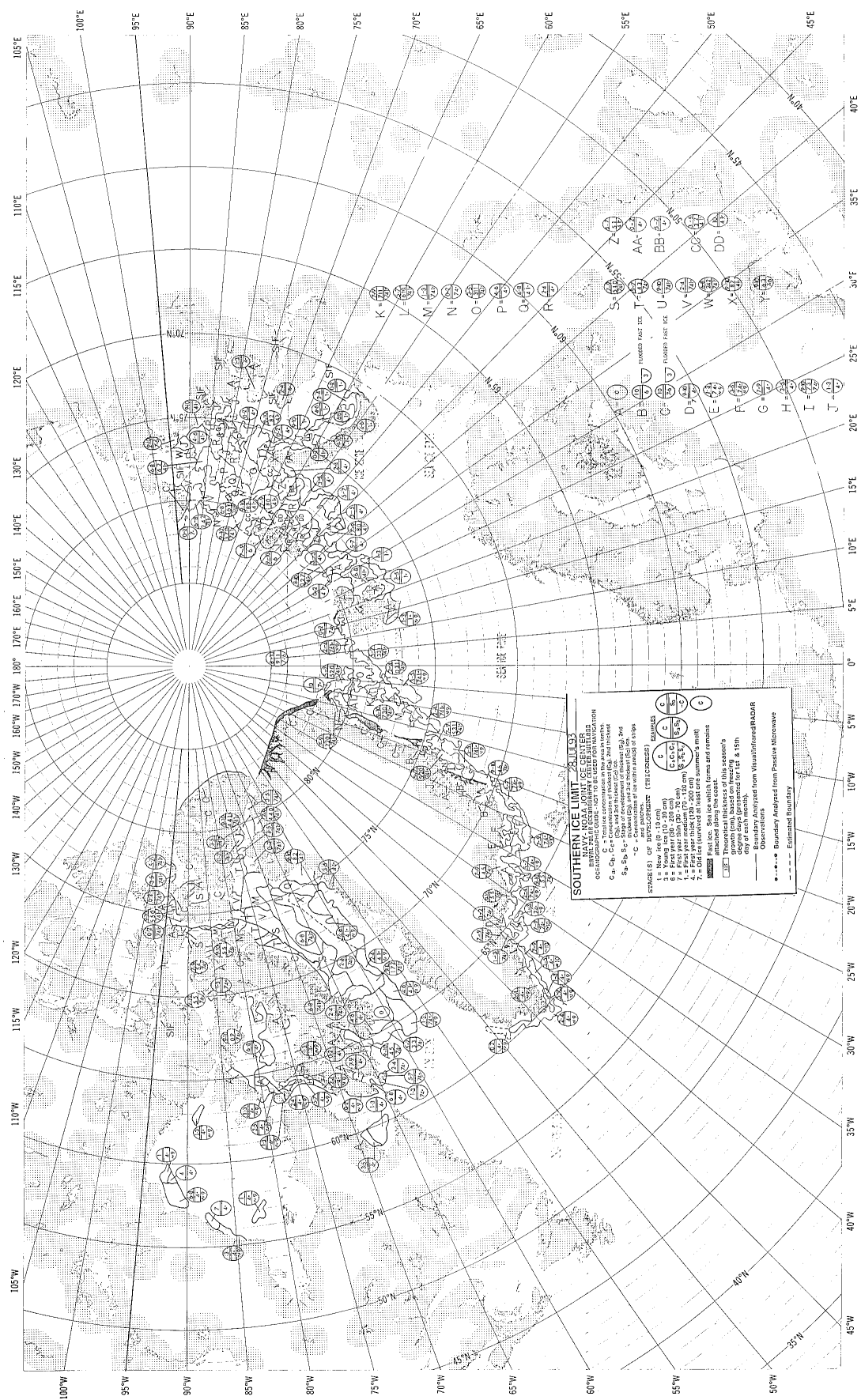


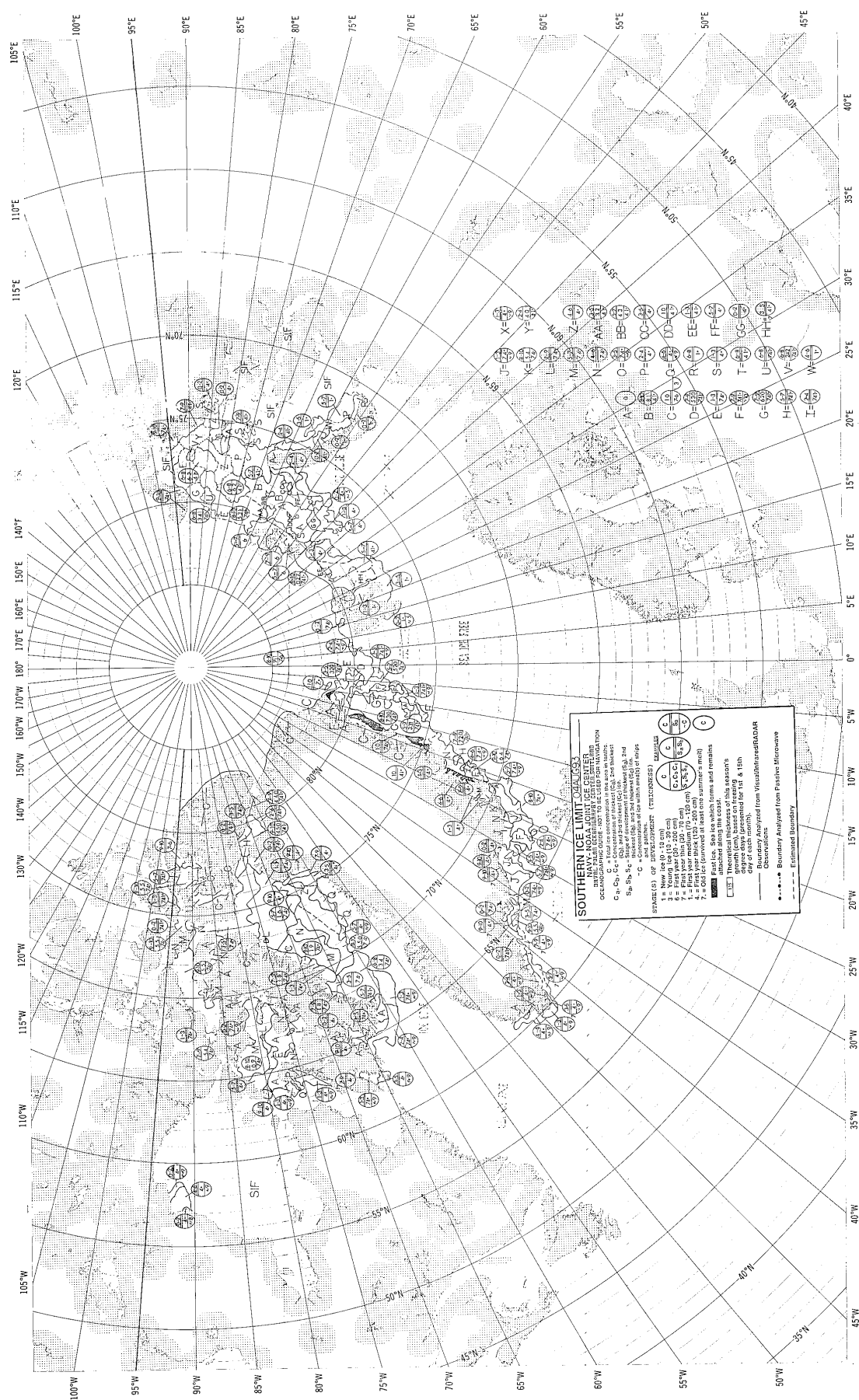
- A = H = O =
 B = I = P =
 C = J = Q =
 D = K = R =
 E = L = S =
 F = M = T =
 G = N =

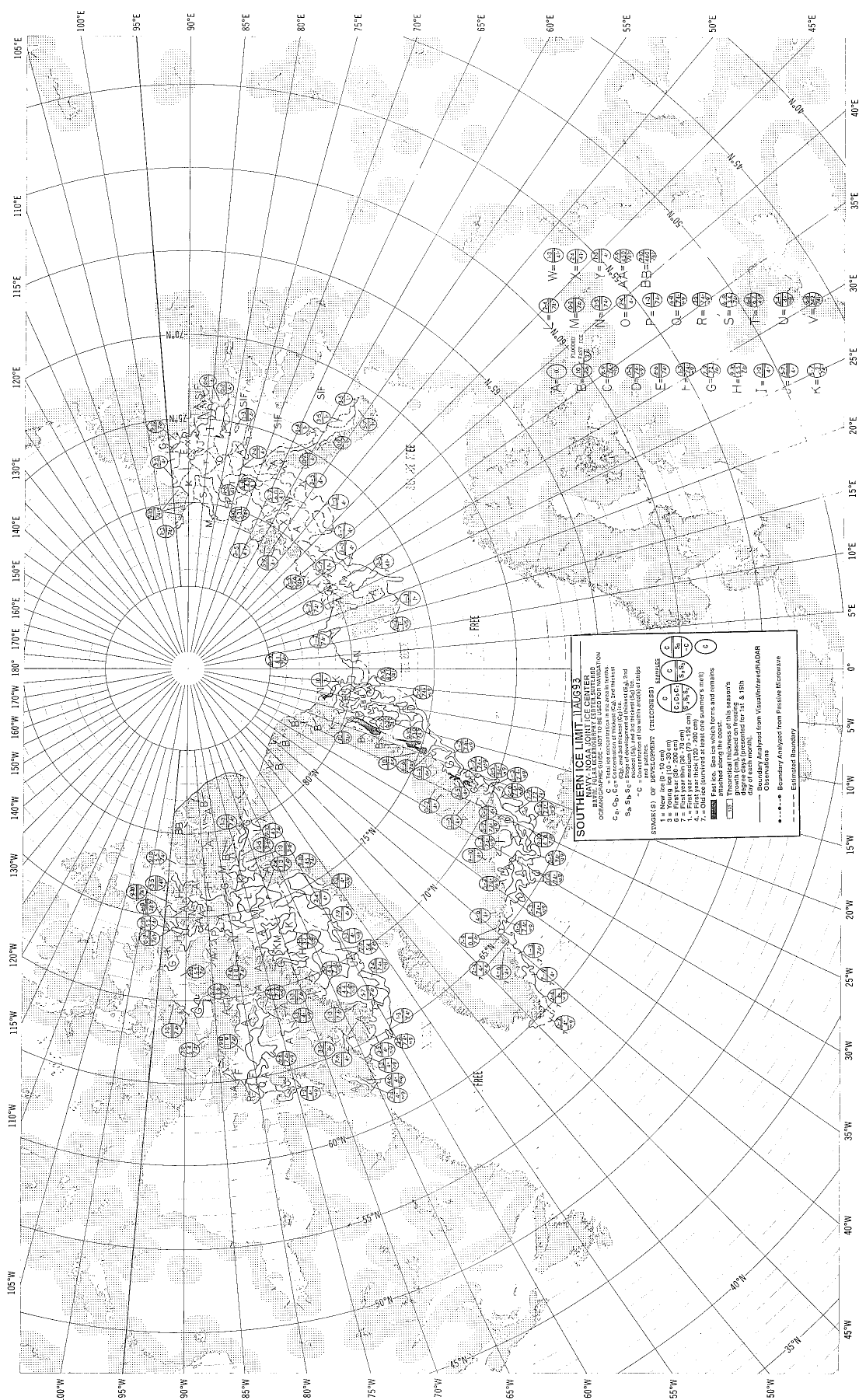
SOUTHERN ICE LIMIT 07 JUL 53
 NAVY/NOAA JOINT ICE CENTER
 OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION
 C = Total ice concentration in the area in tenths.
 C₁C₂C₃ = Concentration of thickness (C₁), and thickness (C₂).
 S₁S₂S₃S₄ = Stage of development of thickness (S₁), and thickness (S₂).
 S₁ = Stage of development of thickness (S₁).
 S₂ = Thickness (S₂) but less than one tenth concentration.
 S₃ = Thicker than S₂ but less than one tenth concentration.
 S₄ = Stage of development having the greatest remaining concentration.
 STAGES OF DEVELOPMENT (THICKNESS)
 1 = New ice (0 to 10 cm)
 2 = First year ice (10 to 20 cm)
 3 = First year ice (20 to 30 cm)
 4 = First year ice (30 to 40 cm)
 5 = First year ice (40 to 50 cm)
 6 = First year ice (50 to 60 cm)
 7 = Old ice (survived at least one summer's melt)
 Landfast ice.
 Theoretical thickness of the season's growth (cm).
 Thickness of ice from previous season.
 Observations.
 Boundary analyzed from previous season.
 Estimated boundary.

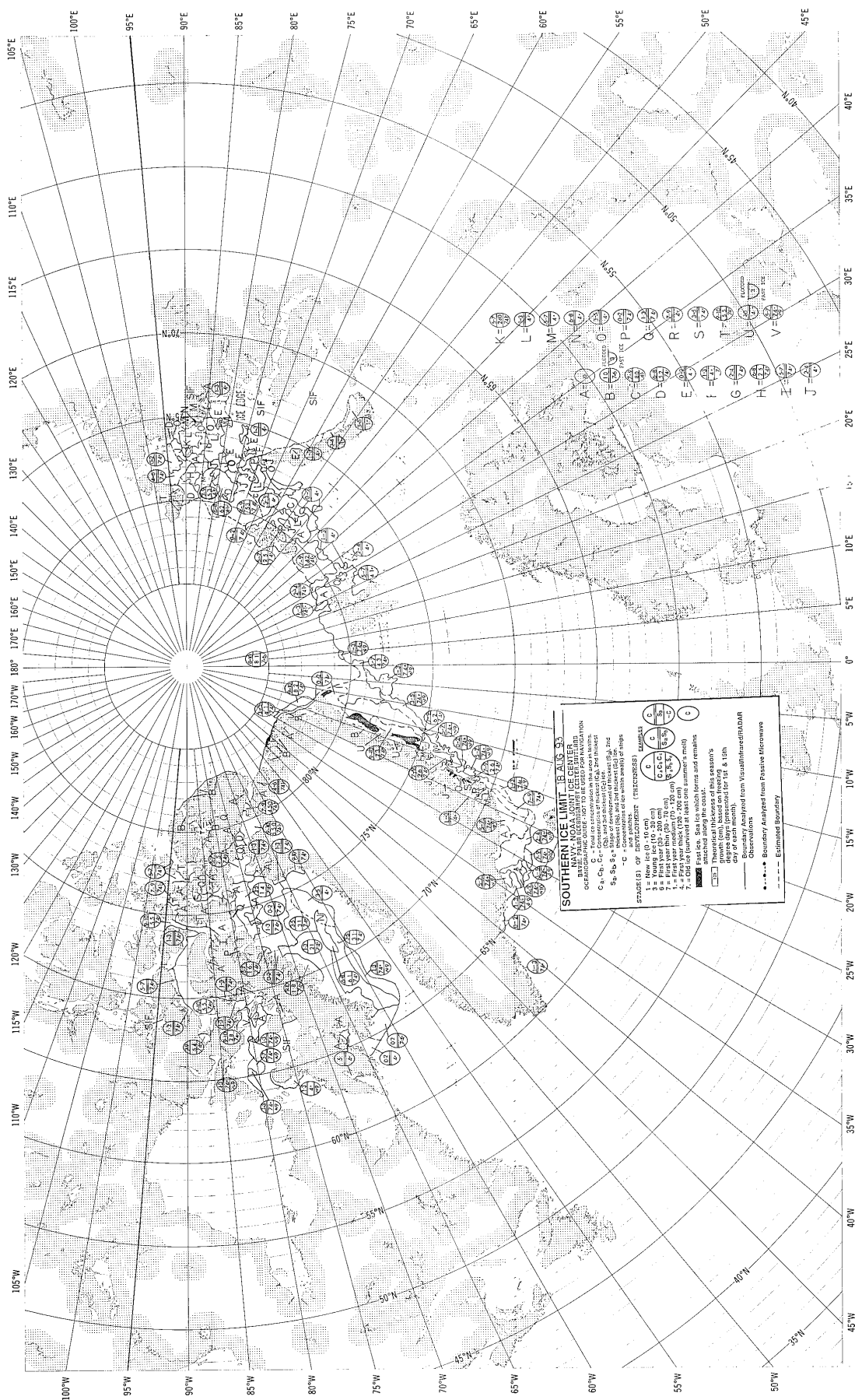


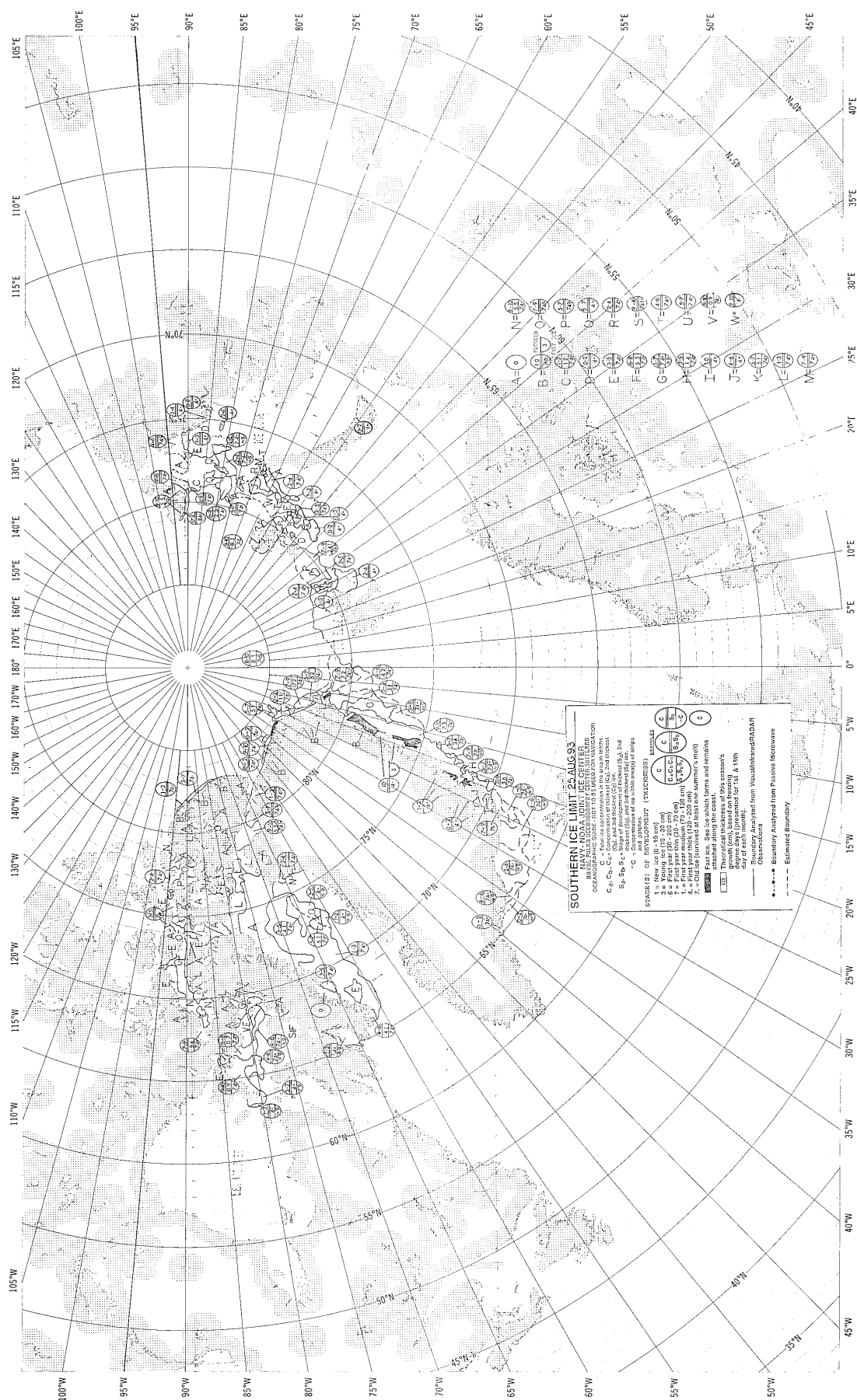


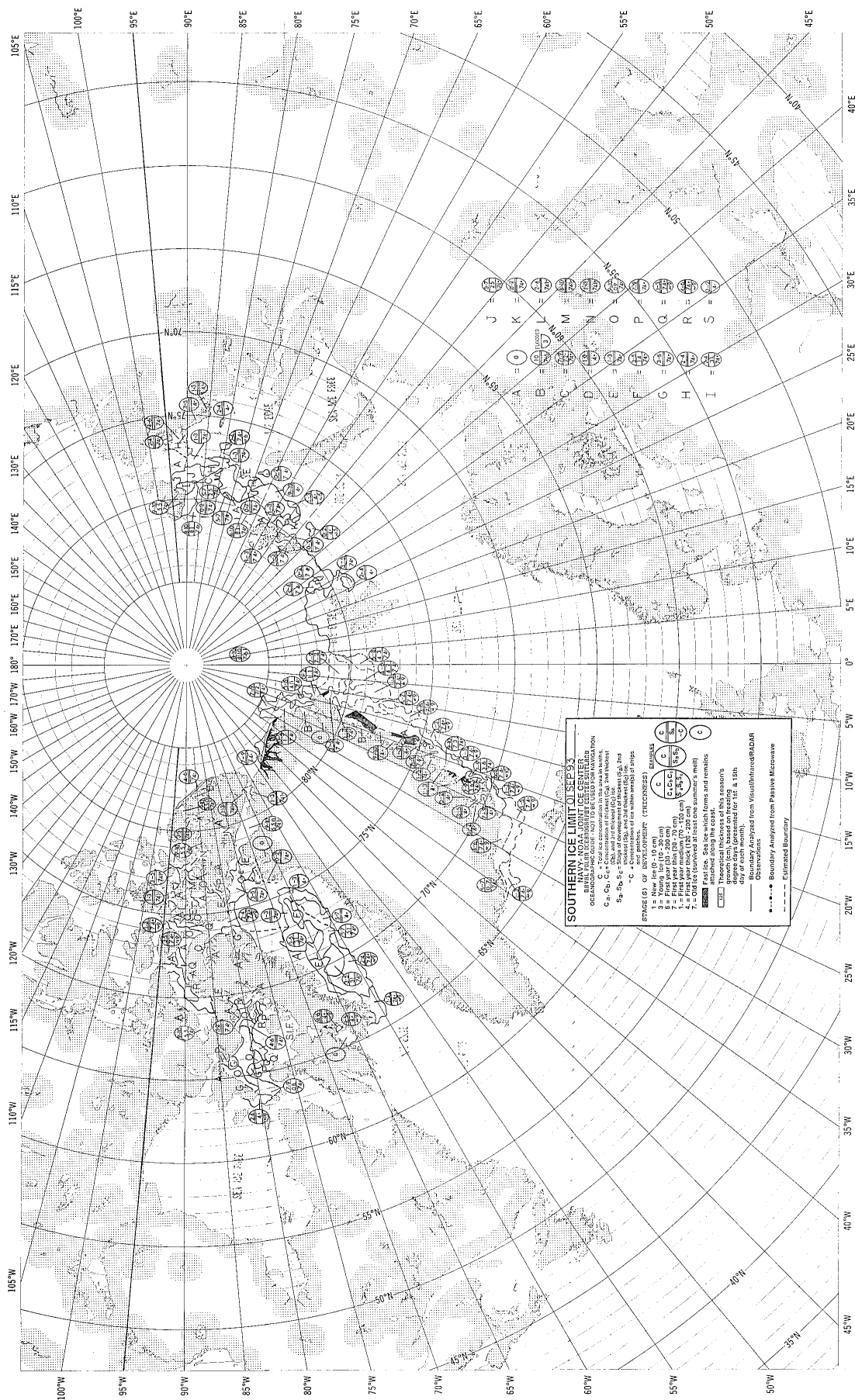


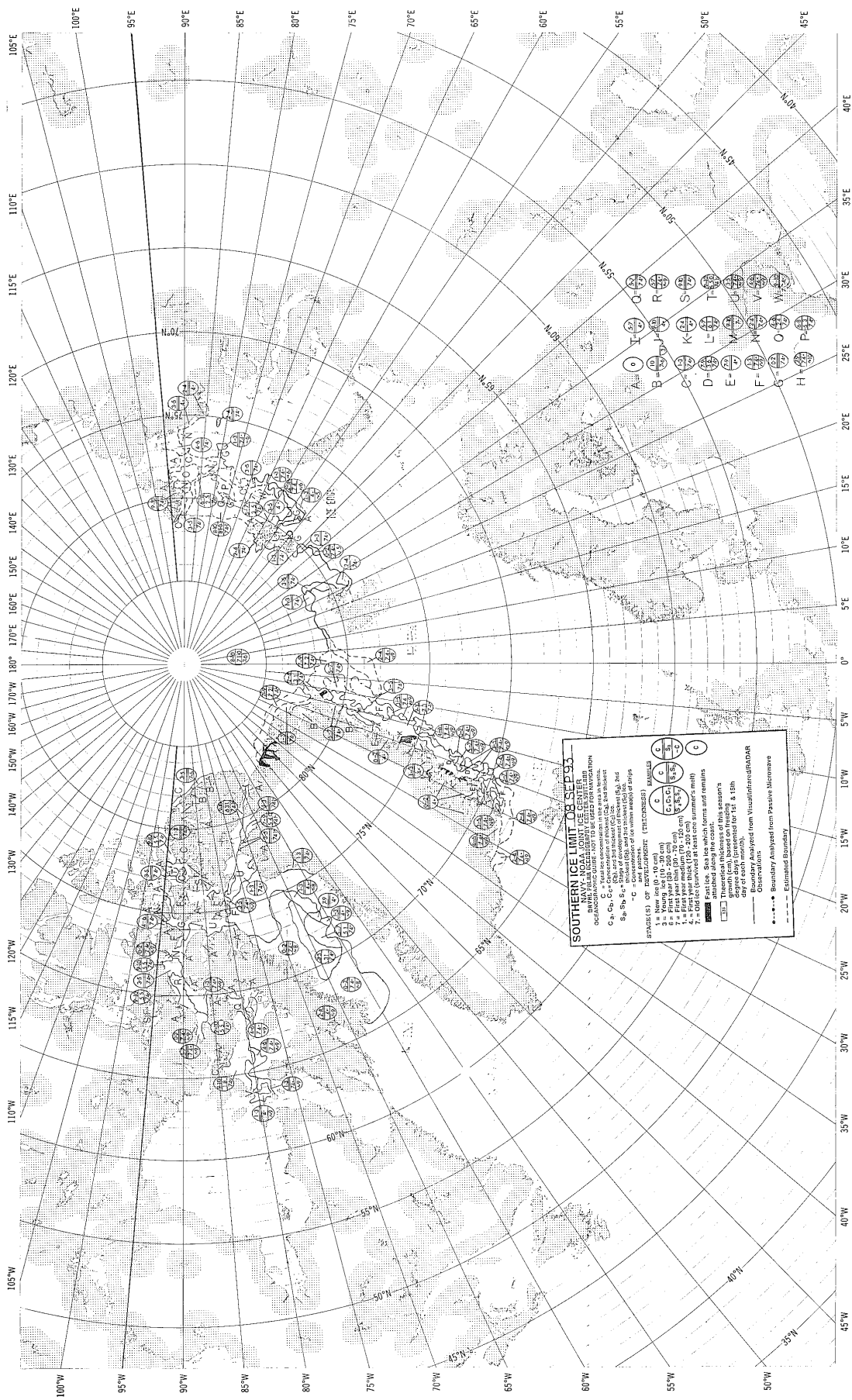


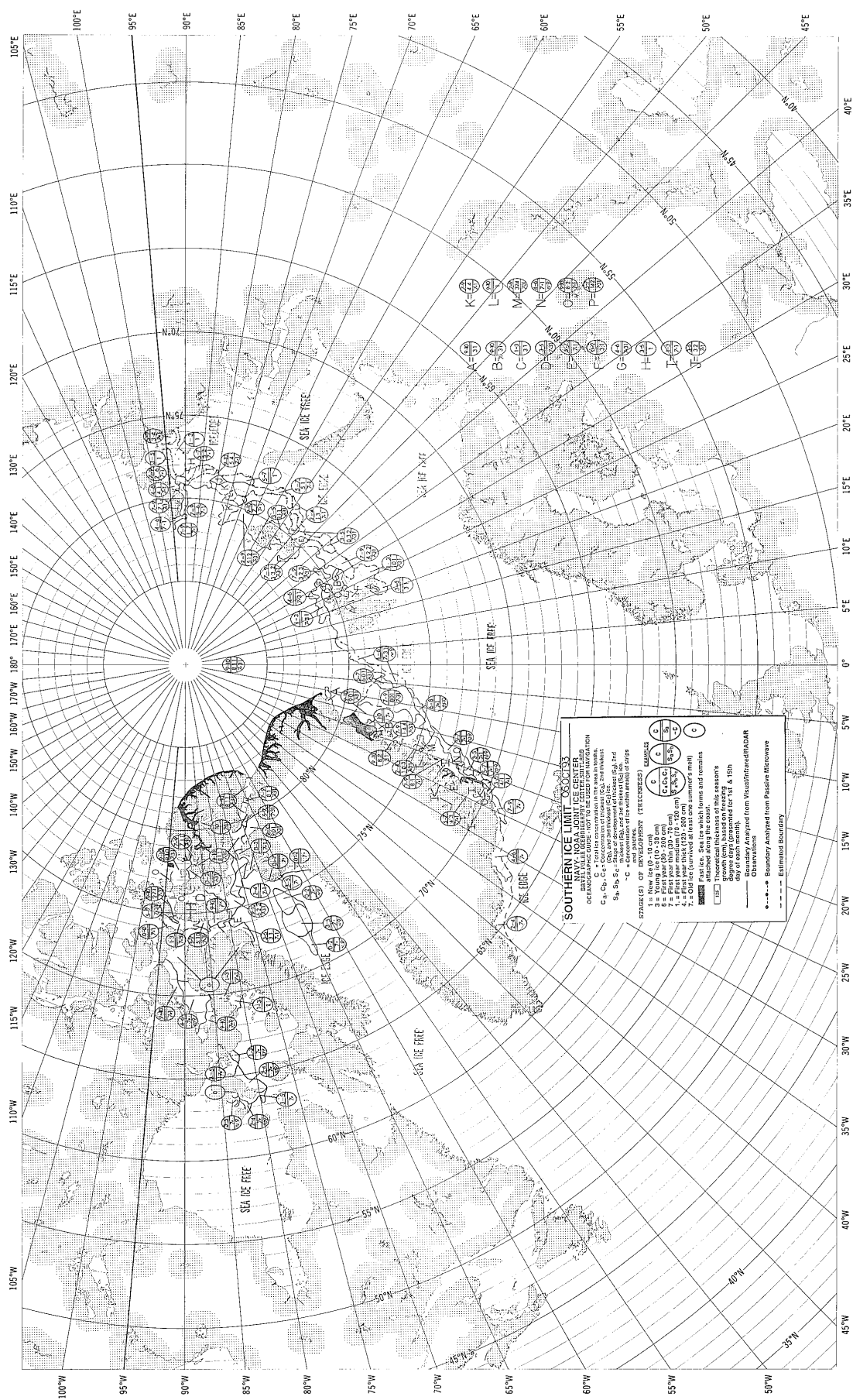


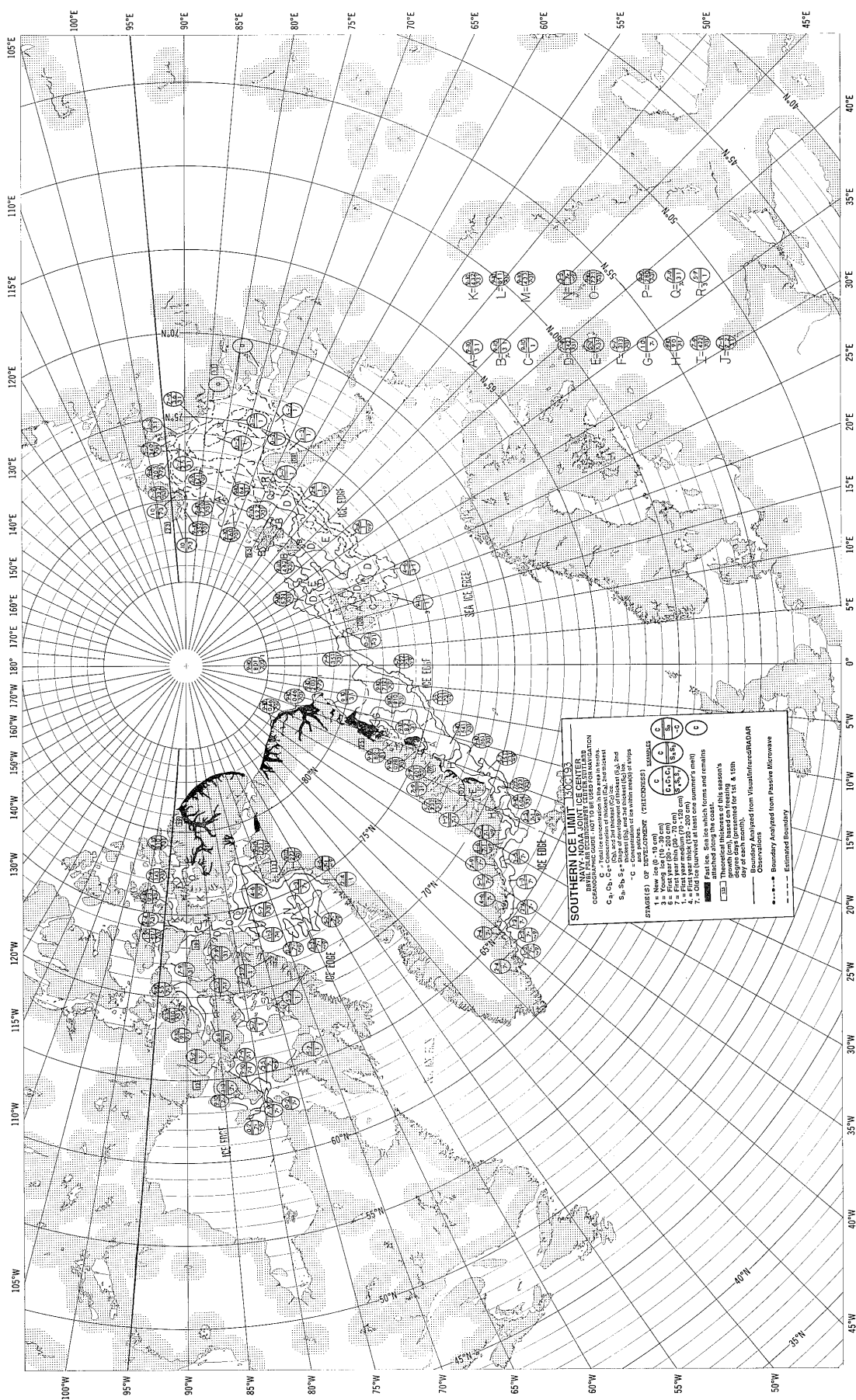


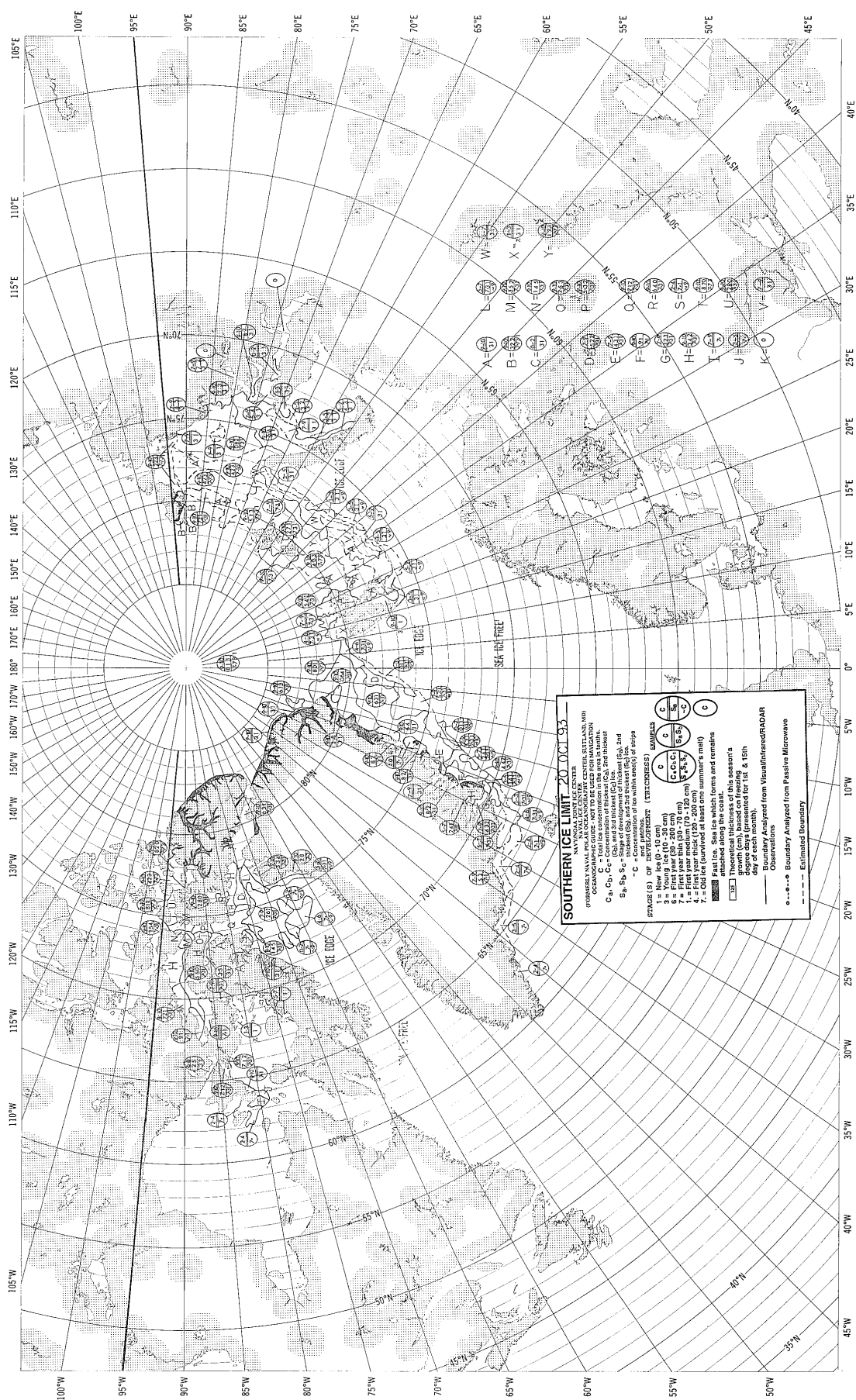


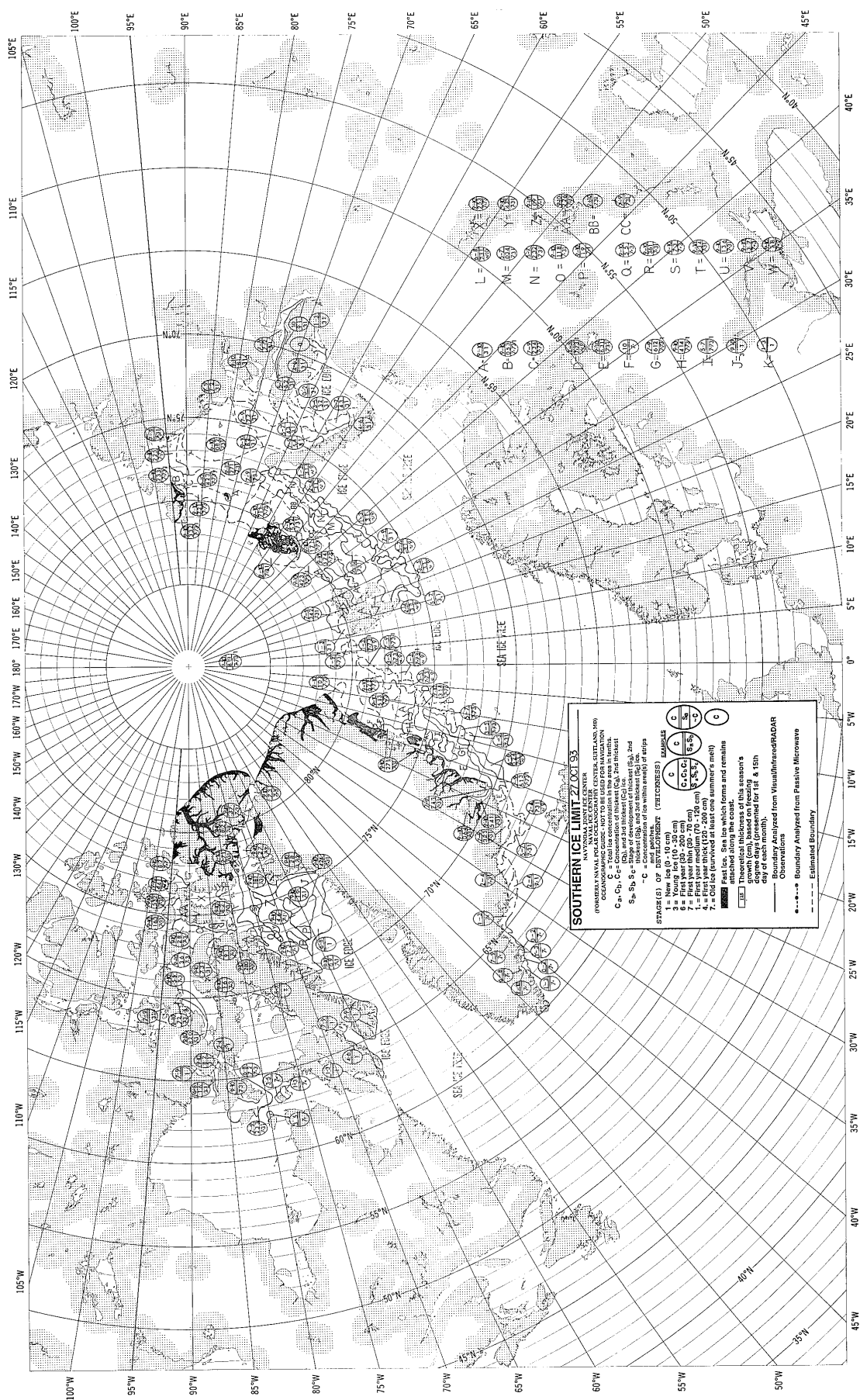


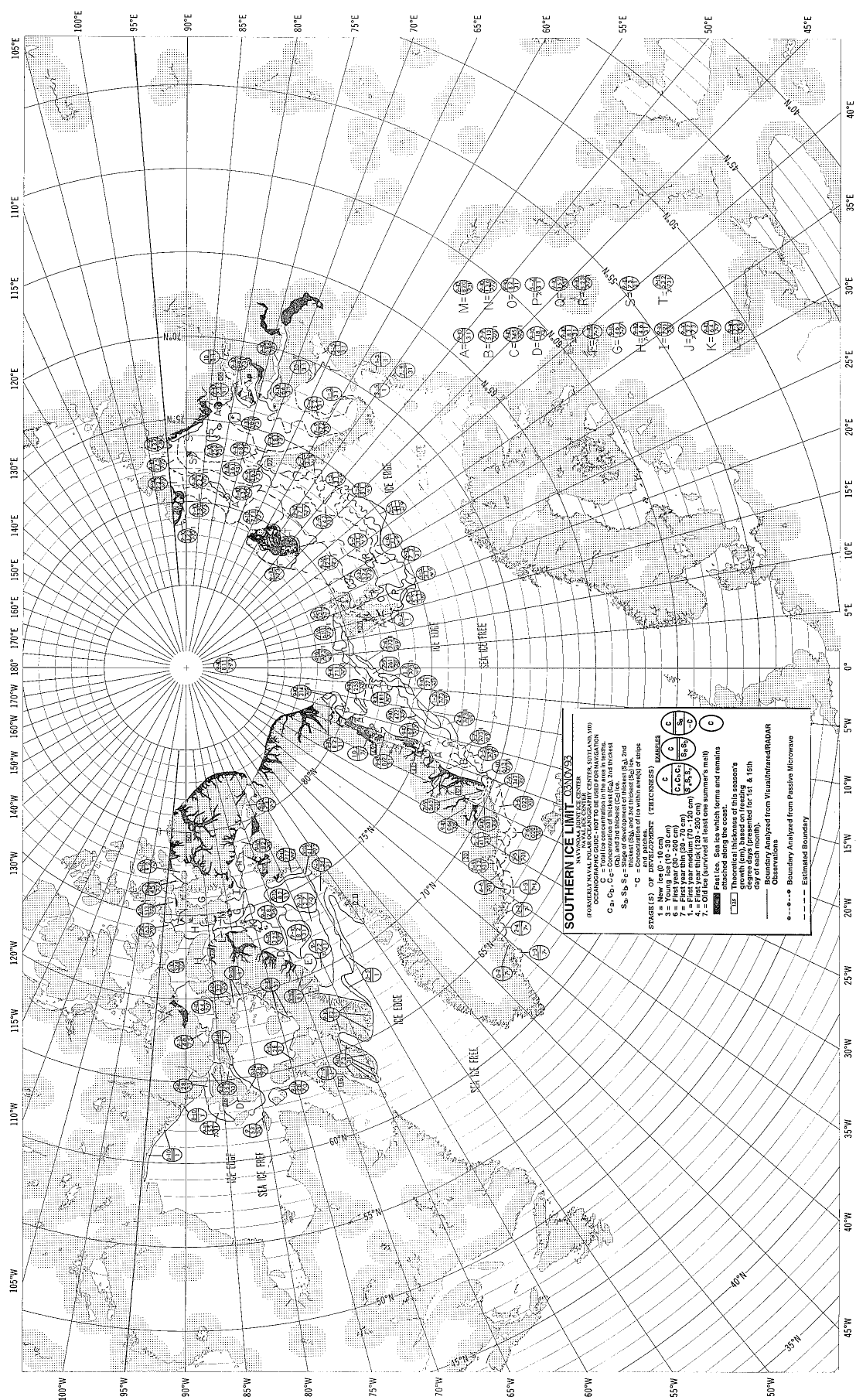


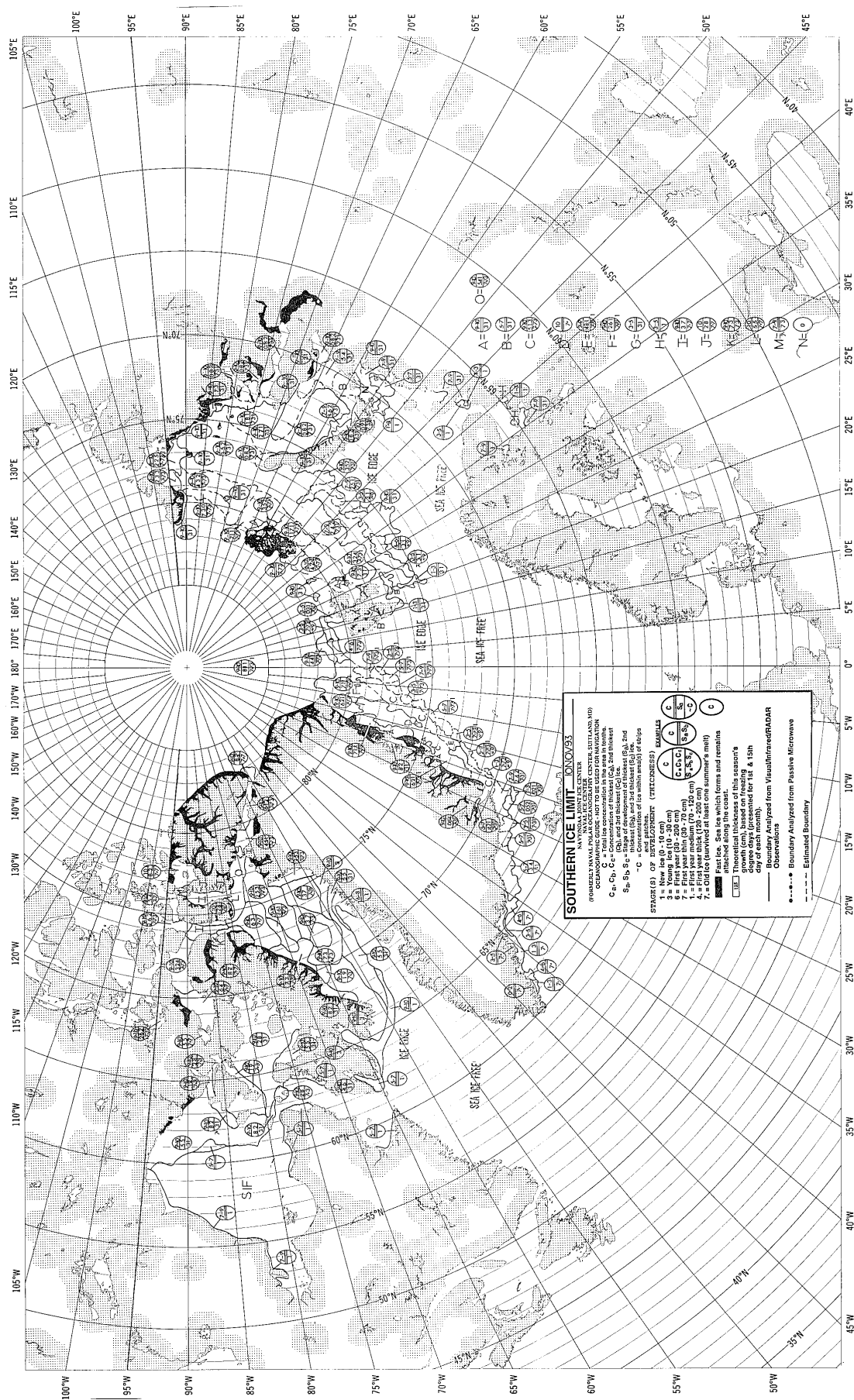


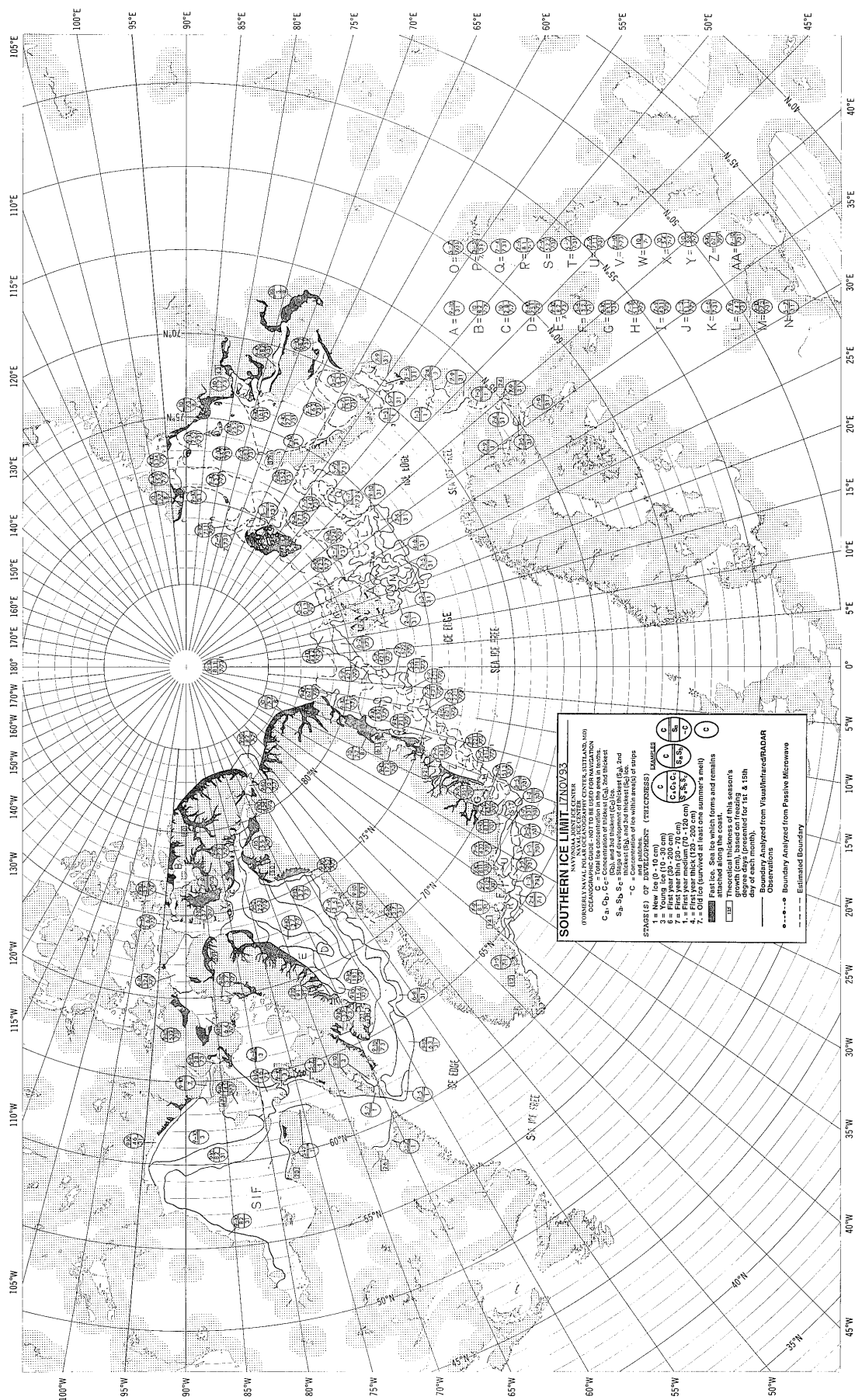


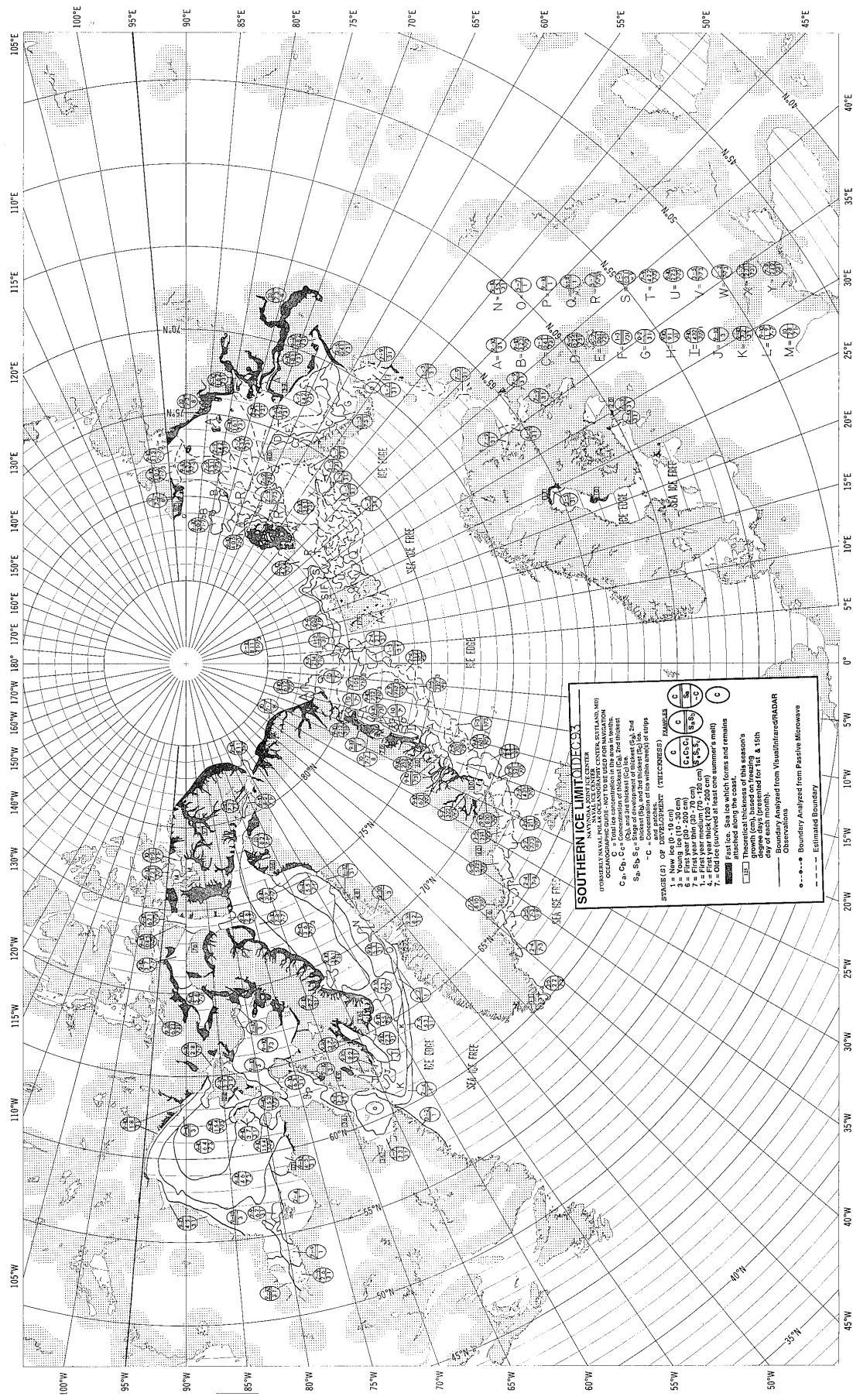












SOUTHERN ICE LIMIT DEC 83

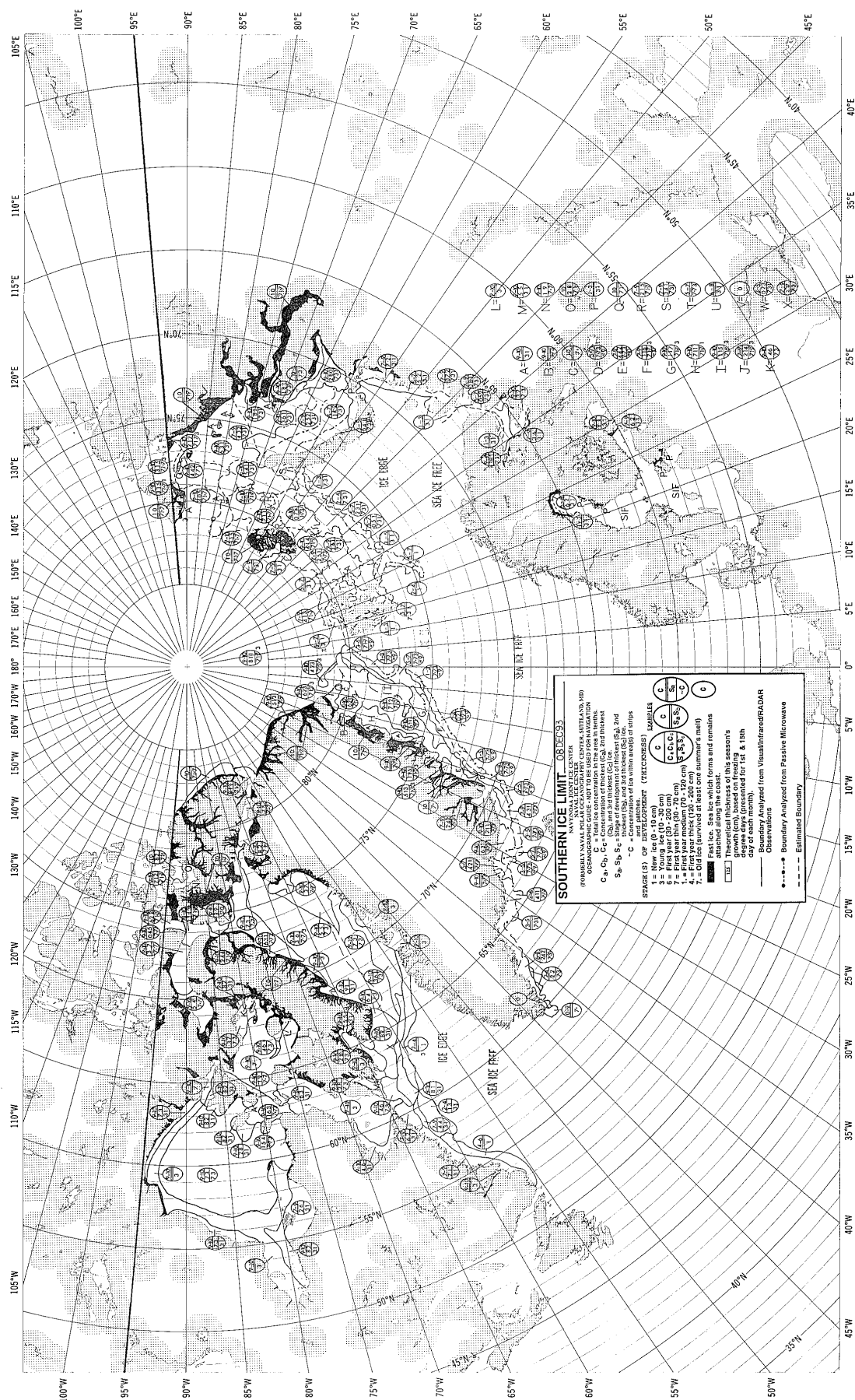
NAVY/NOAA JOINT CENTER
(FORMERLY NAVAL POLAR OCEANOGRAPHIC CENTER, SALT LAKE CITY, UT)

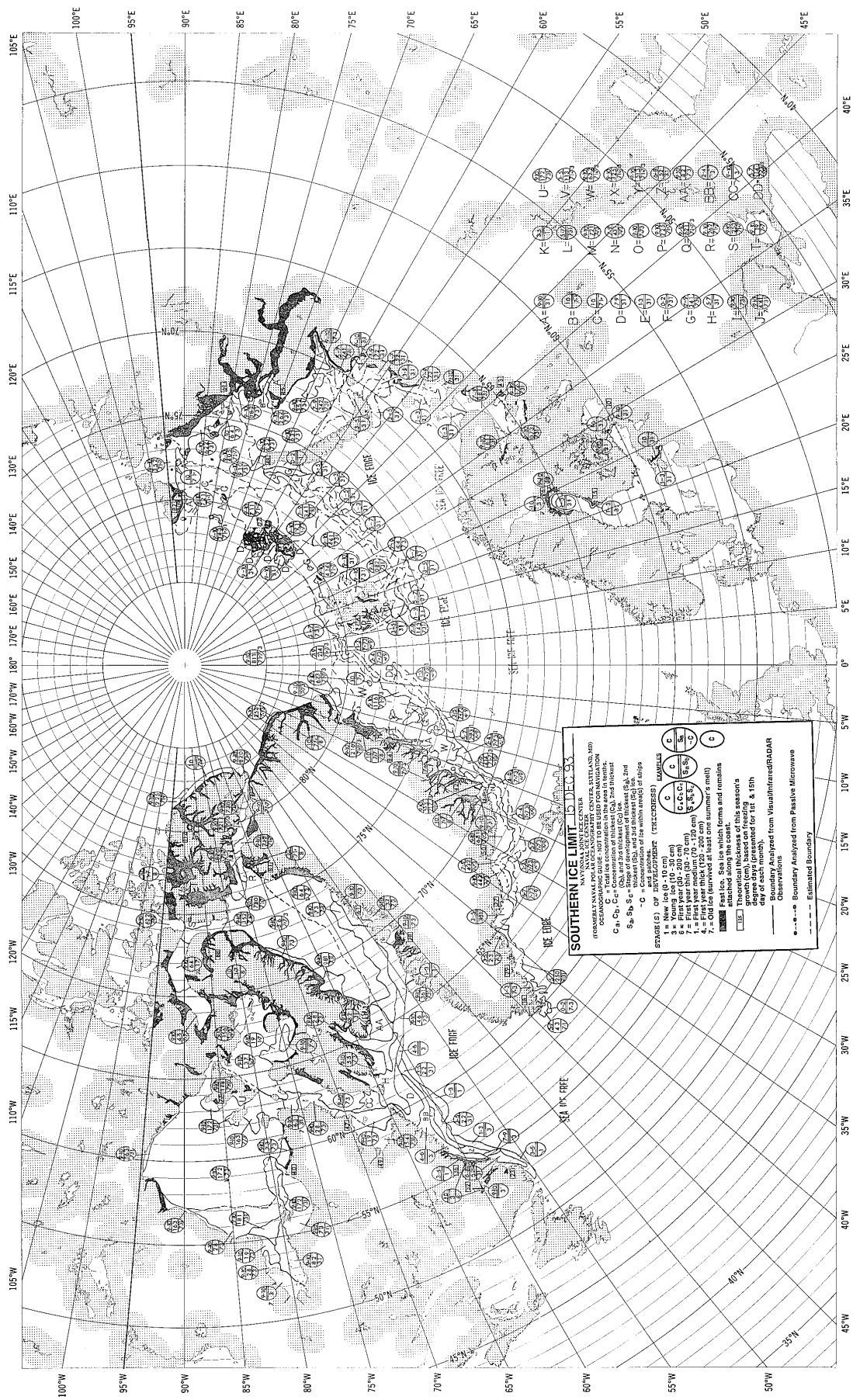
STAGE (S) OF DEVELOPMENT (TELECODES)

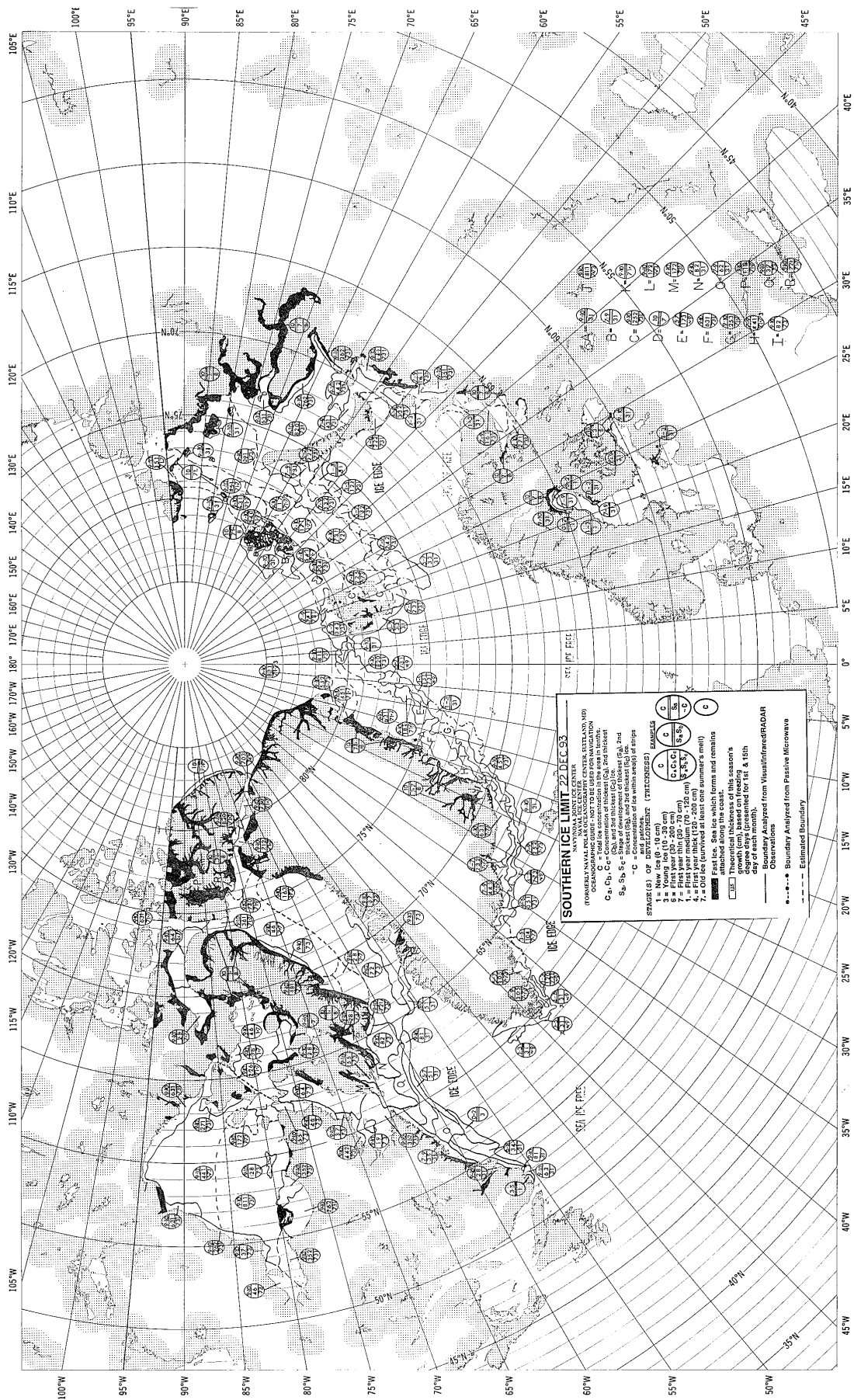
1 = New Ice (0 - 10 cm)
2 = First year (10 - 20 cm)
3 = First year (20 - 50 cm)
4 = First year (50 - 100 cm)
5 = First year (100 - 150 cm)
6 = First year (150 - 200 cm)
7 = First year (200 - 250 cm)
8 = First year (250 - 300 cm)
9 = First year (300 - 350 cm)
10 = First year (350 - 400 cm)
11 = First year (400 - 450 cm)
12 = First year (450 - 500 cm)
13 = First year (500 - 550 cm)
14 = First year (550 - 600 cm)
15 = First year (600 - 650 cm)
16 = First year (650 - 700 cm)
17 = First year (700 - 750 cm)
18 = First year (750 - 800 cm)
19 = First year (800 - 850 cm)
20 = First year (850 - 900 cm)
21 = First year (900 - 950 cm)
22 = First year (950 - 1000 cm)
23 = First year (1000 - 1050 cm)
24 = First year (1050 - 1100 cm)
25 = First year (1100 - 1150 cm)
26 = First year (1150 - 1200 cm)
27 = First year (1200 - 1250 cm)
28 = First year (1250 - 1300 cm)
29 = First year (1300 - 1350 cm)
30 = First year (1350 - 1400 cm)
31 = First year (1400 - 1450 cm)
32 = First year (1450 - 1500 cm)
33 = First year (1500 - 1550 cm)
34 = First year (1550 - 1600 cm)
35 = First year (1600 - 1650 cm)
36 = First year (1650 - 1700 cm)
37 = First year (1700 - 1750 cm)
38 = First year (1750 - 1800 cm)
39 = First year (1800 - 1850 cm)
40 = First year (1850 - 1900 cm)
41 = First year (1900 - 1950 cm)
42 = First year (1950 - 2000 cm)
43 = First year (2000 - 2050 cm)
44 = First year (2050 - 2100 cm)
45 = First year (2100 - 2150 cm)
46 = First year (2150 - 2200 cm)
47 = First year (2200 - 2250 cm)
48 = First year (2250 - 2300 cm)
49 = First year (2300 - 2350 cm)
50 = First year (2350 - 2400 cm)
51 = First year (2400 - 2450 cm)
52 = First year (2450 - 2500 cm)
53 = First year (2500 - 2550 cm)
54 = First year (2550 - 2600 cm)
55 = First year (2600 - 2650 cm)
56 = First year (2650 - 2700 cm)
57 = First year (2700 - 2750 cm)
58 = First year (2750 - 2800 cm)
59 = First year (2800 - 2850 cm)
60 = First year (2850 - 2900 cm)
61 = First year (2900 - 2950 cm)
62 = First year (2950 - 3000 cm)
63 = First year (3000 - 3050 cm)
64 = First year (3050 - 3100 cm)
65 = First year (3100 - 3150 cm)
66 = First year (3150 - 3200 cm)
67 = First year (3200 - 3250 cm)
68 = First year (3250 - 3300 cm)
69 = First year (3300 - 3350 cm)
70 = First year (3350 - 3400 cm)
71 = First year (3400 - 3450 cm)
72 = First year (3450 - 3500 cm)
73 = First year (3500 - 3550 cm)
74 = First year (3550 - 3600 cm)
75 = First year (3600 - 3650 cm)
76 = First year (3650 - 3700 cm)
77 = First year (3700 - 3750 cm)
78 = First year (3750 - 3800 cm)
79 = First year (3800 - 3850 cm)
80 = First year (3850 - 3900 cm)
81 = First year (3900 - 3950 cm)
82 = First year (3950 - 4000 cm)
83 = First year (4000 - 4050 cm)
84 = First year (4050 - 4100 cm)
85 = First year (4100 - 4150 cm)
86 = First year (4150 - 4200 cm)
87 = First year (4200 - 4250 cm)
88 = First year (4250 - 4300 cm)
89 = First year (4300 - 4350 cm)
90 = First year (4350 - 4400 cm)
91 = First year (4400 - 4450 cm)
92 = First year (4450 - 4500 cm)
93 = First year (4500 - 4550 cm)
94 = First year (4550 - 4600 cm)
95 = First year (4600 - 4650 cm)
96 = First year (4650 - 4700 cm)
97 = First year (4700 - 4750 cm)
98 = First year (4750 - 4800 cm)
99 = First year (4800 - 4850 cm)
100 = First year (4850 - 4900 cm)
101 = First year (4900 - 4950 cm)
102 = First year (4950 - 5000 cm)
103 = First year (5000 - 5050 cm)
104 = First year (5050 - 5100 cm)
105 = First year (5100 - 5150 cm)
106 = First year (5150 - 5200 cm)
107 = First year (5200 - 5250 cm)
108 = First year (5250 - 5300 cm)
109 = First year (5300 - 5350 cm)
110 = First year (5350 - 5400 cm)
111 = First year (5400 - 5450 cm)
112 = First year (5450 - 5500 cm)
113 = First year (5500 - 5550 cm)
114 = First year (5550 - 5600 cm)
115 = First year (5600 - 5650 cm)
116 = First year (5650 - 5700 cm)
117 = First year (5700 - 5750 cm)
118 = First year (5750 - 5800 cm)
119 = First year (5800 - 5850 cm)
120 = First year (5850 - 5900 cm)
121 = First year (5900 - 5950 cm)
122 = First year (5950 - 6000 cm)
123 = First year (6000 - 6050 cm)
124 = First year (6050 - 6100 cm)
125 = First year (6100 - 6150 cm)
126 = First year (6150 - 6200 cm)
127 = First year (6200 - 6250 cm)
128 = First year (6250 - 6300 cm)
129 = First year (6300 - 6350 cm)
130 = First year (6350 - 6400 cm)
131 = First year (6400 - 6450 cm)
132 = First year (6450 - 6500 cm)
133 = First year (6500 - 6550 cm)
134 = First year (6550 - 6600 cm)
135 = First year (6600 - 6650 cm)
136 = First year (6650 - 6700 cm)
137 = First year (6700 - 6750 cm)
138 = First year (6750 - 6800 cm)
139 = First year (6800 - 6850 cm)
140 = First year (6850 - 6900 cm)
141 = First year (6900 - 6950 cm)
142 = First year (6950 - 7000 cm)
143 = First year (7000 - 7050 cm)
144 = First year (7050 - 7100 cm)
145 = First year (7100 - 7150 cm)
146 = First year (7150 - 7200 cm)
147 = First year (7200 - 7250 cm)
148 = First year (7250 - 7300 cm)
149 = First year (7300 - 7350 cm)
150 = First year (7350 - 7400 cm)
151 = First year (7400 - 7450 cm)
152 = First year (7450 - 7500 cm)
153 = First year (7500 - 7550 cm)
154 = First year (7550 - 7600 cm)
155 = First year (7600 - 7650 cm)
156 = First year (7650 - 7700 cm)
157 = First year (7700 - 7750 cm)
158 = First year (7750 - 7800 cm)
159 = First year (7800 - 7850 cm)
160 = First year (7850 - 7900 cm)
161 = First year (7900 - 7950 cm)
162 = First year (7950 - 8000 cm)
163 = First year (8000 - 8050 cm)
164 = First year (8050 - 8100 cm)
165 = First year (8100 - 8150 cm)
166 = First year (8150 - 8200 cm)
167 = First year (8200 - 8250 cm)
168 = First year (8250 - 8300 cm)
169 = First year (8300 - 8350 cm)
170 = First year (8350 - 8400 cm)
171 = First year (8400 - 8450 cm)
172 = First year (8450 - 8500 cm)
173 = First year (8500 - 8550 cm)
174 = First year (8550 - 8600 cm)
175 = First year (8600 - 8650 cm)
176 = First year (8650 - 8700 cm)
177 = First year (8700 - 8750 cm)
178 = First year (8750 - 8800 cm)
179 = First year (8800 - 8850 cm)
180 = First year (8850 - 8900 cm)
181 = First year (8900 - 8950 cm)
182 = First year (8950 - 9000 cm)
183 = First year (9000 - 9050 cm)
184 = First year (9050 - 9100 cm)
185 = First year (9100 - 9150 cm)
186 = First year (9150 - 9200 cm)
187 = First year (9200 - 9250 cm)
188 = First year (9250 - 9300 cm)
189 = First year (9300 - 9350 cm)
190 = First year (9350 - 9400 cm)
191 = First year (9400 - 9450 cm)
192 = First year (9450 - 9500 cm)
193 = First year (9500 - 9550 cm)
194 = First year (9550 - 9600 cm)
195 = First year (9600 - 9650 cm)
196 = First year (9650 - 9700 cm)
197 = First year (9700 - 9750 cm)
198 = First year (9750 - 9800 cm)
199 = First year (9800 - 9850 cm)
200 = First year (9850 - 9900 cm)
201 = First year (9900 - 9950 cm)
202 = First year (9950 - 10000 cm)

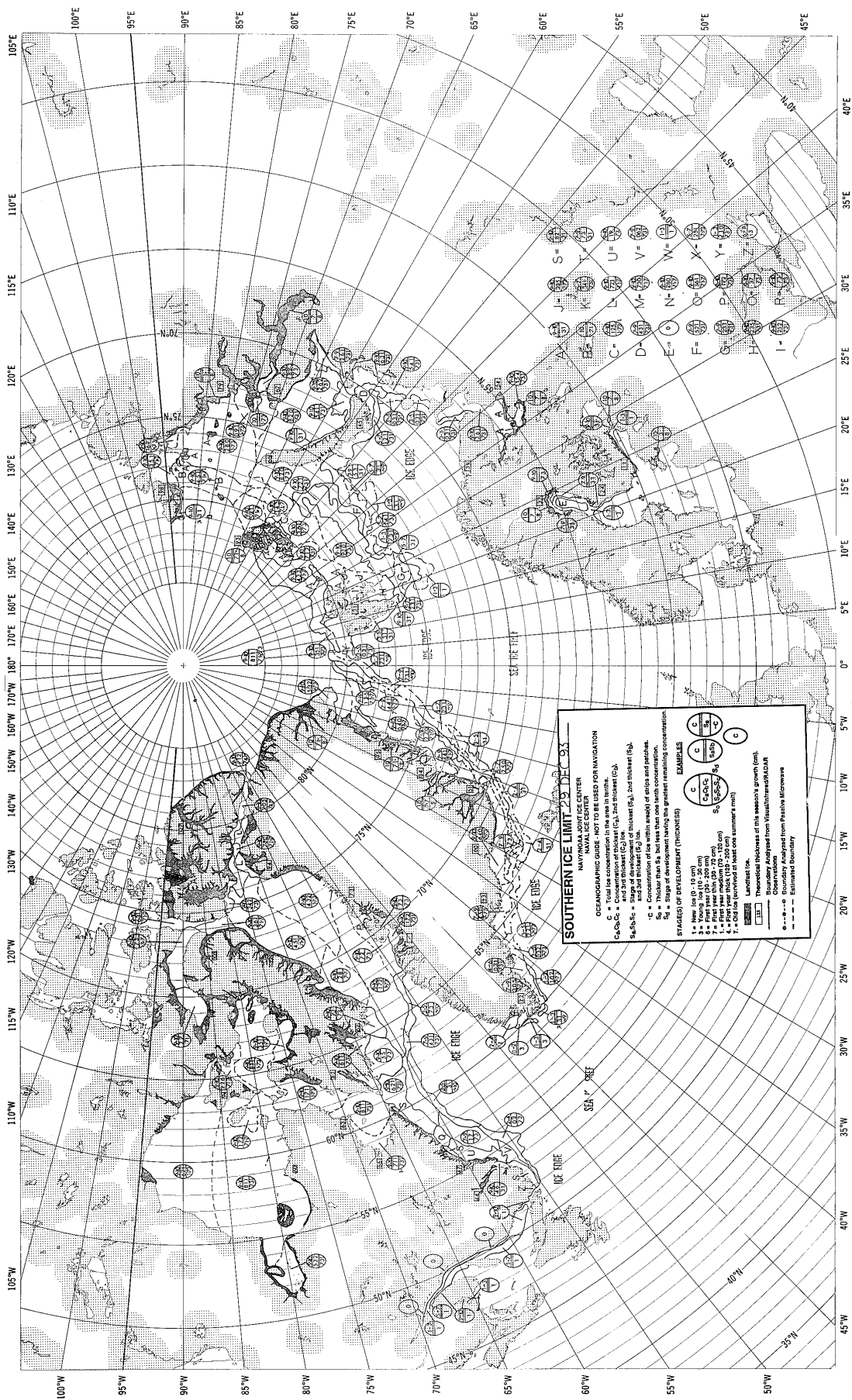
BOUNDARY ANALYZED FROM PASSIVE MICROWAVE

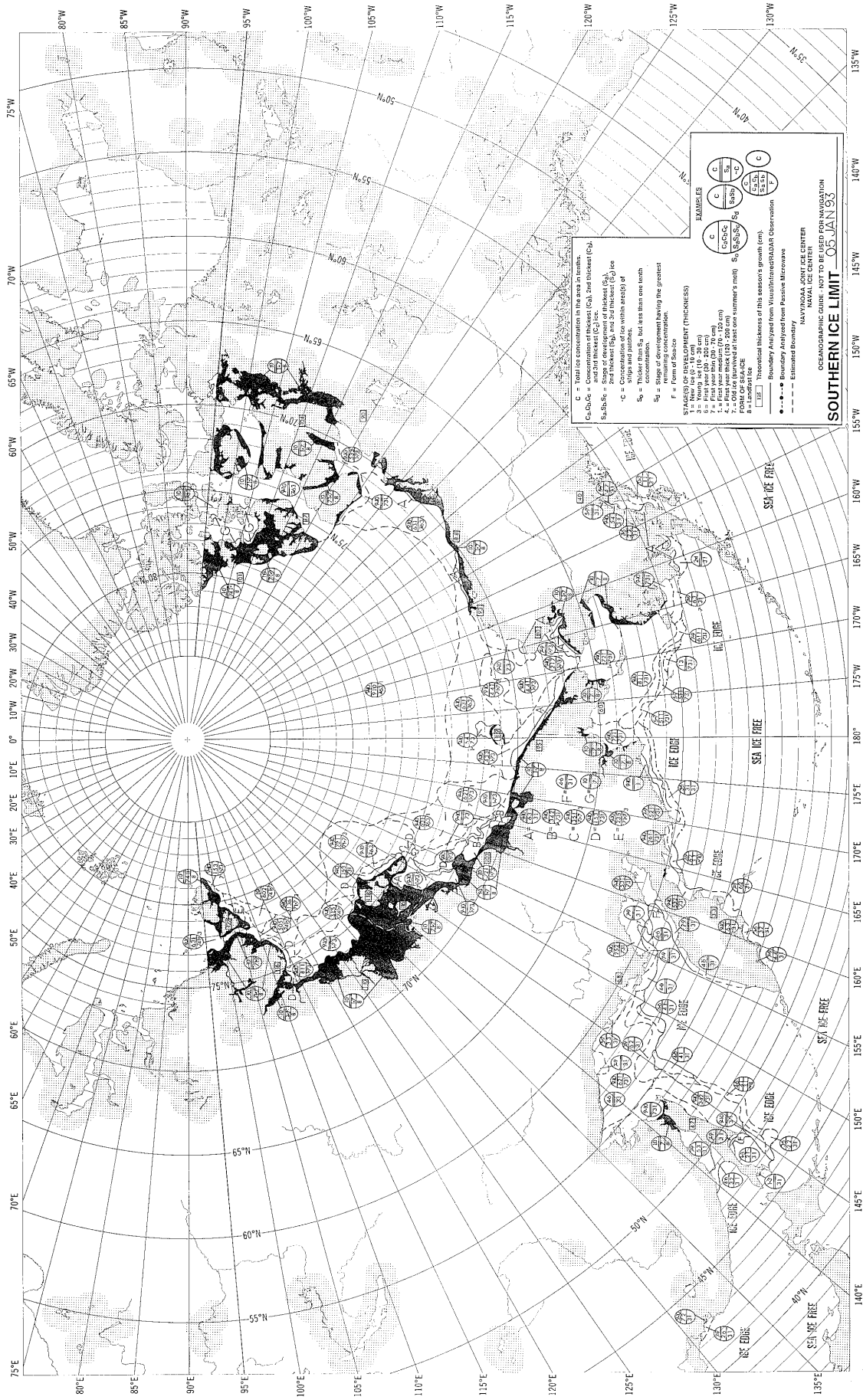
ESTIMATED BOUNDARY











LEGEND

SHADING

C = Total ice concentration in the area in tenths.
 C_{0.5}C_{0.25}C_{0.125} = Concentration of ice in tenths, and in tenths of tenths (C/10).
 S_{0.5}S_{0.25}S_{0.125} = Stage of development of thickest ice (S_{0.5} = 1st year ice, S_{0.25} = 2nd year ice, S_{0.125} = 3rd year ice).
 C = Concentration of ice within areas of ships and parties.

SYMBOLS

S_{0.5} = Thicker than S_{0.25} but less than one tenth remaining concentration.
 S_{0.25} = Stage of development having the greatest remaining concentration.
 F = First year ice.

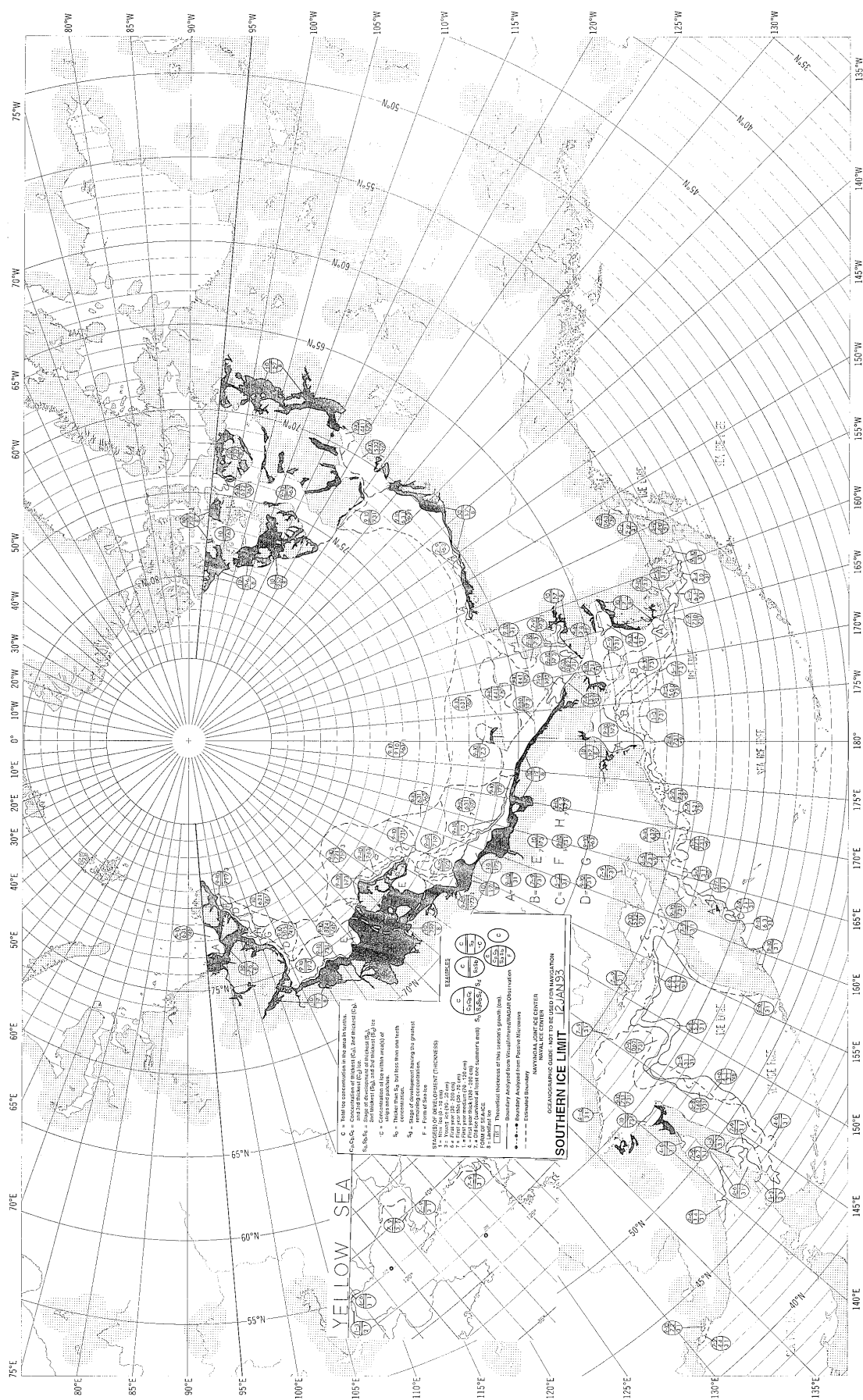
STAGES OF DEVELOPMENT (THICKNESS)

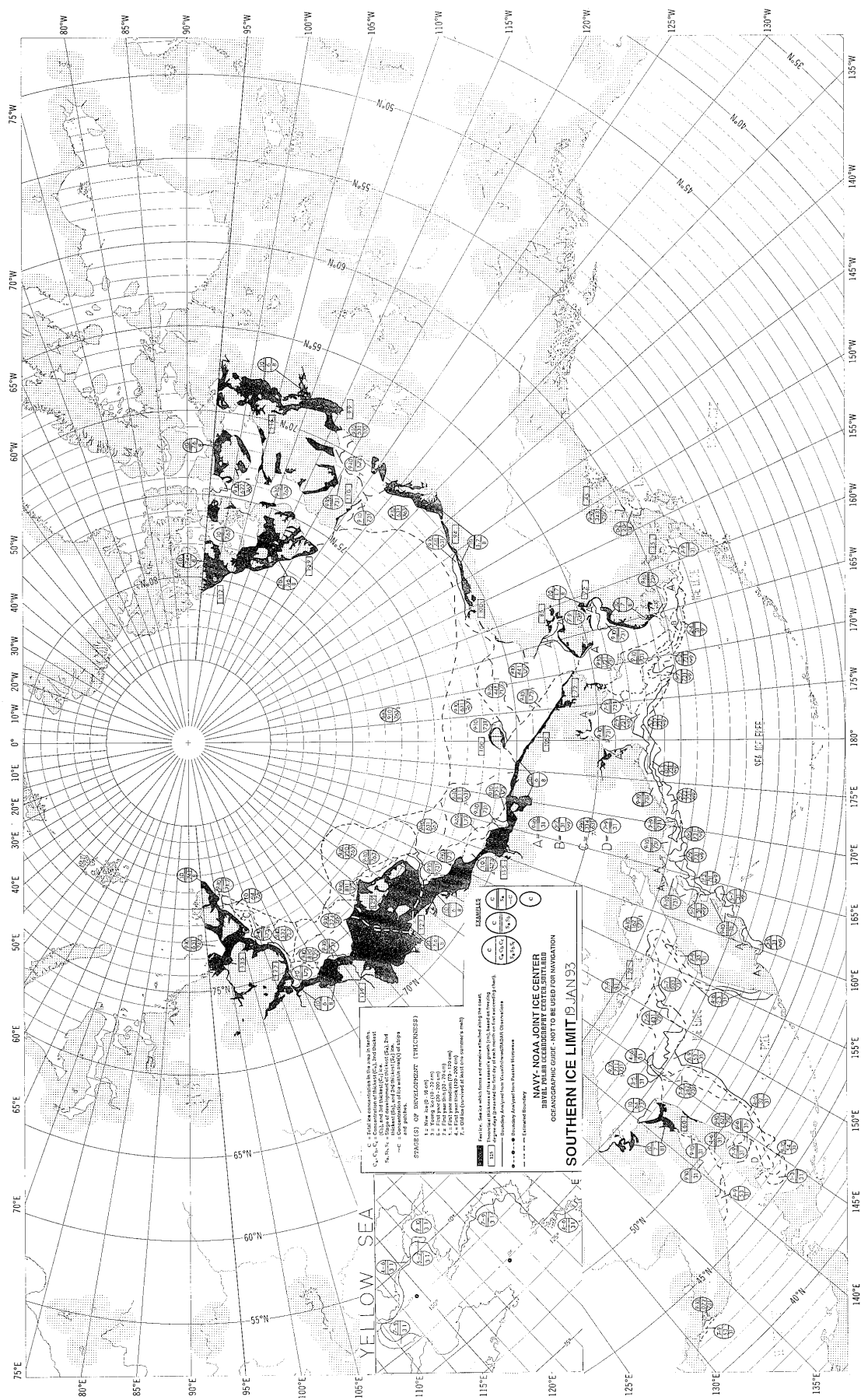
1 = New ice (0 - 10 cm)
 2 = First year ice (10 - 20 cm)
 3 = First year ice (20 - 30 cm)
 4 = First year ice (30 - 40 cm)
 5 = First year ice (40 - 50 cm)
 6 = First year ice (50 - 60 cm)
 7 = First year ice (60 - 70 cm)
 8 = First year ice (70 - 80 cm)
 9 = First year ice (80 - 90 cm)
 10 = First year ice (90 - 100 cm)
 11 = First year ice (100 - 110 cm)
 12 = First year ice (110 - 120 cm)
 13 = First year ice (120 - 130 cm)
 14 = First year ice (130 - 140 cm)
 15 = First year ice (140 - 150 cm)
 16 = First year ice (150 - 160 cm)
 17 = First year ice (160 - 170 cm)
 18 = First year ice (170 - 180 cm)
 19 = First year ice (180 - 190 cm)
 20 = First year ice (190 - 200 cm)
 21 = First year ice (200 - 210 cm)
 22 = First year ice (210 - 220 cm)
 23 = First year ice (220 - 230 cm)
 24 = First year ice (230 - 240 cm)
 25 = First year ice (240 - 250 cm)
 26 = First year ice (250 - 260 cm)
 27 = First year ice (260 - 270 cm)
 28 = First year ice (270 - 280 cm)
 29 = First year ice (280 - 290 cm)
 30 = First year ice (290 - 300 cm)
 31 = First year ice (300 - 310 cm)
 32 = First year ice (310 - 320 cm)
 33 = First year ice (320 - 330 cm)
 34 = First year ice (330 - 340 cm)
 35 = First year ice (340 - 350 cm)
 36 = First year ice (350 - 360 cm)
 37 = First year ice (360 - 370 cm)
 38 = First year ice (370 - 380 cm)
 39 = First year ice (380 - 390 cm)
 40 = First year ice (390 - 400 cm)
 41 = First year ice (400 - 410 cm)
 42 = First year ice (410 - 420 cm)
 43 = First year ice (420 - 430 cm)
 44 = First year ice (430 - 440 cm)
 45 = First year ice (440 - 450 cm)
 46 = First year ice (450 - 460 cm)
 47 = First year ice (460 - 470 cm)
 48 = First year ice (470 - 480 cm)
 49 = First year ice (480 - 490 cm)
 50 = First year ice (490 - 500 cm)
 51 = First year ice (500 - 510 cm)
 52 = First year ice (510 - 520 cm)
 53 = First year ice (520 - 530 cm)
 54 = First year ice (530 - 540 cm)
 55 = First year ice (540 - 550 cm)
 56 = First year ice (550 - 560 cm)
 57 = First year ice (560 - 570 cm)
 58 = First year ice (570 - 580 cm)
 59 = First year ice (580 - 590 cm)
 60 = First year ice (590 - 600 cm)
 61 = First year ice (600 - 610 cm)
 62 = First year ice (610 - 620 cm)
 63 = First year ice (620 - 630 cm)
 64 = First year ice (630 - 640 cm)
 65 = First year ice (640 - 650 cm)
 66 = First year ice (650 - 660 cm)
 67 = First year ice (660 - 670 cm)
 68 = First year ice (670 - 680 cm)
 69 = First year ice (680 - 690 cm)
 70 = First year ice (690 - 700 cm)
 71 = First year ice (700 - 710 cm)
 72 = First year ice (710 - 720 cm)
 73 = First year ice (720 - 730 cm)
 74 = First year ice (730 - 740 cm)
 75 = First year ice (740 - 750 cm)
 76 = First year ice (750 - 760 cm)
 77 = First year ice (760 - 770 cm)
 78 = First year ice (770 - 780 cm)
 79 = First year ice (780 - 790 cm)
 80 = First year ice (790 - 800 cm)
 81 = First year ice (800 - 810 cm)
 82 = First year ice (810 - 820 cm)
 83 = First year ice (820 - 830 cm)
 84 = First year ice (830 - 840 cm)
 85 = First year ice (840 - 850 cm)
 86 = First year ice (850 - 860 cm)
 87 = First year ice (860 - 870 cm)
 88 = First year ice (870 - 880 cm)
 89 = First year ice (880 - 890 cm)
 90 = First year ice (890 - 900 cm)
 91 = First year ice (900 - 910 cm)
 92 = First year ice (910 - 920 cm)
 93 = First year ice (920 - 930 cm)
 94 = First year ice (930 - 940 cm)
 95 = First year ice (940 - 950 cm)
 96 = First year ice (950 - 960 cm)
 97 = First year ice (960 - 970 cm)
 98 = First year ice (970 - 980 cm)
 99 = First year ice (980 - 990 cm)
 100 = First year ice (990 - 1000 cm)

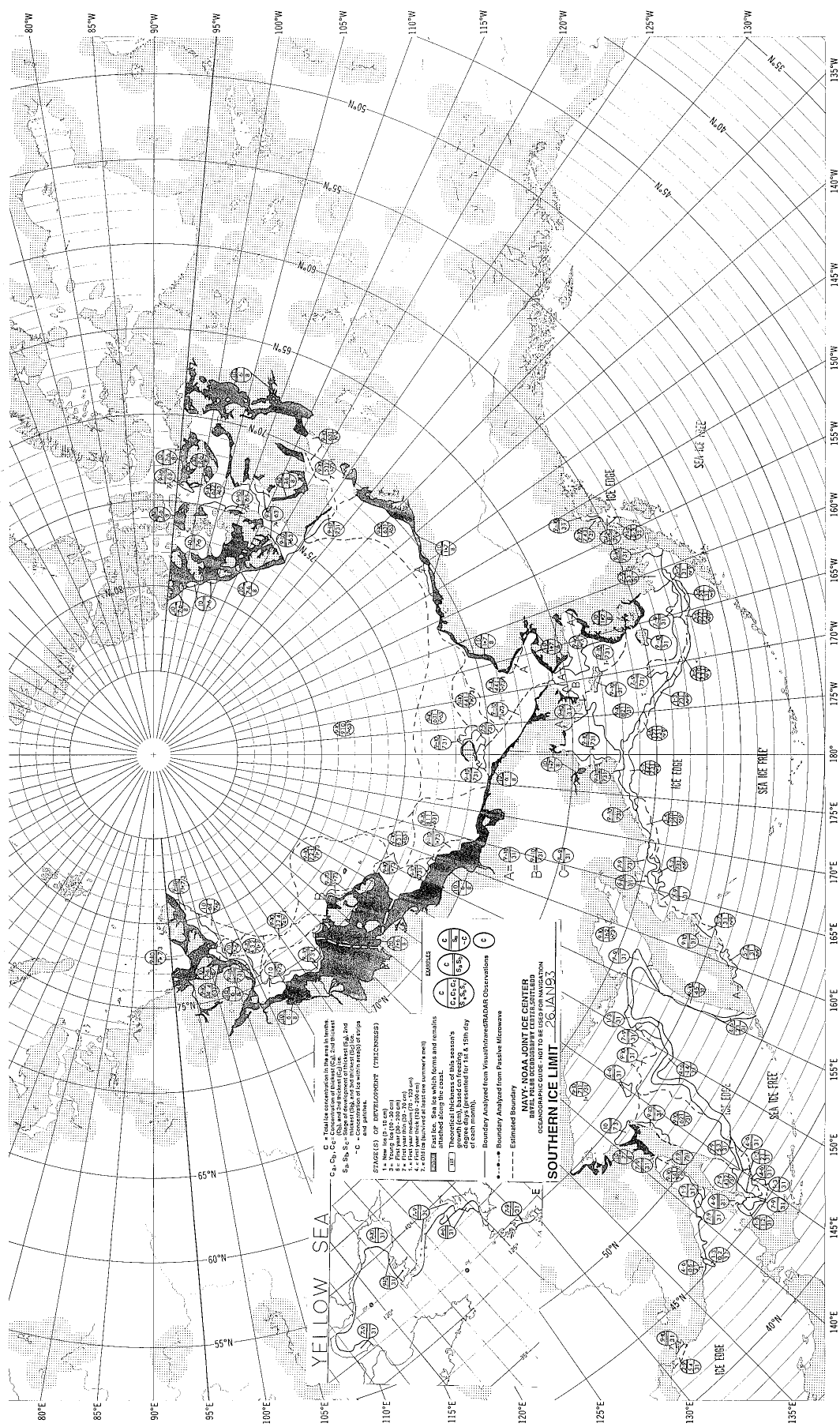
BOUNDARY ANALYSIS

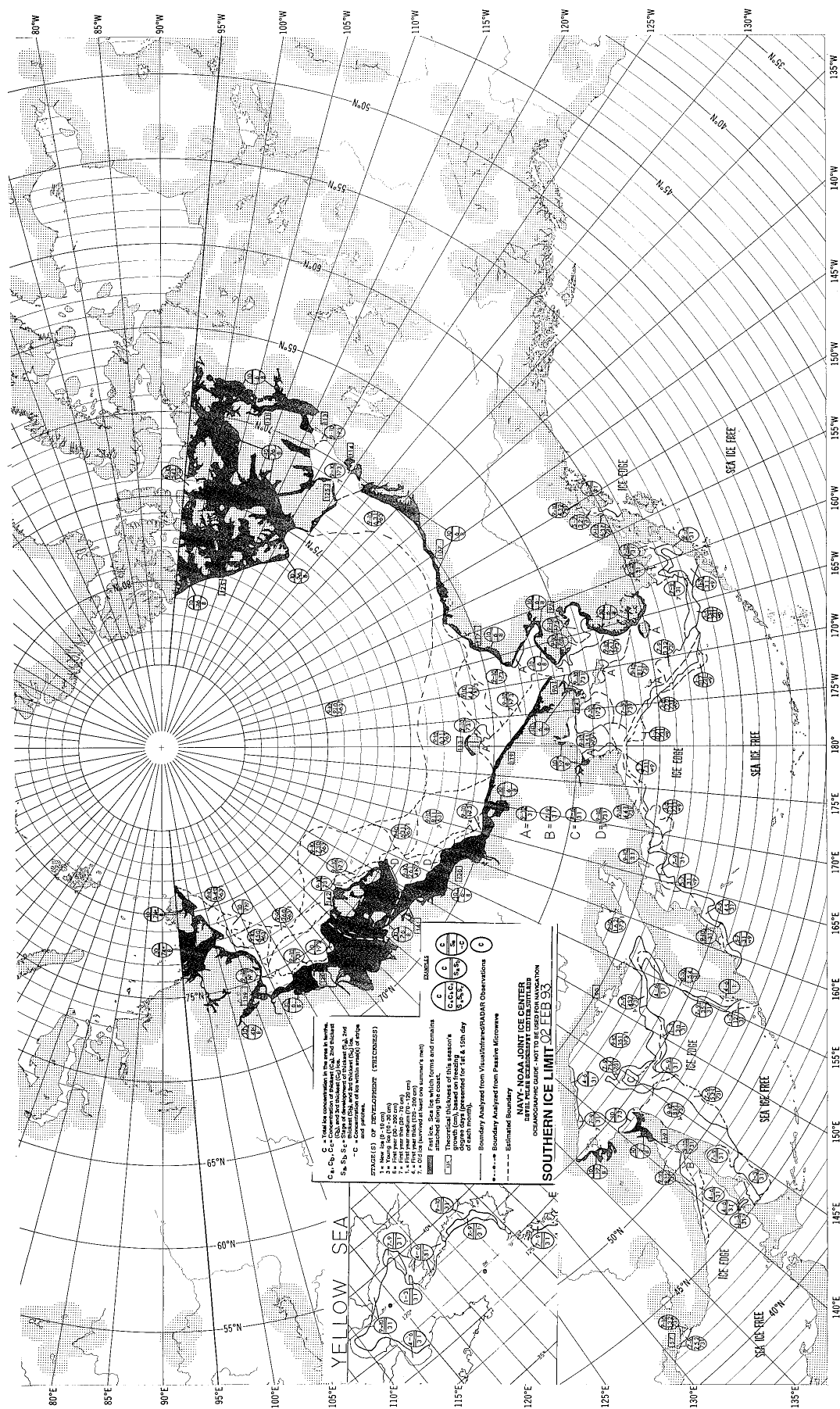
Boundary Analysis from Visual Observations
 Boundary Analysis from Passive Microwave
 Estimated Boundary

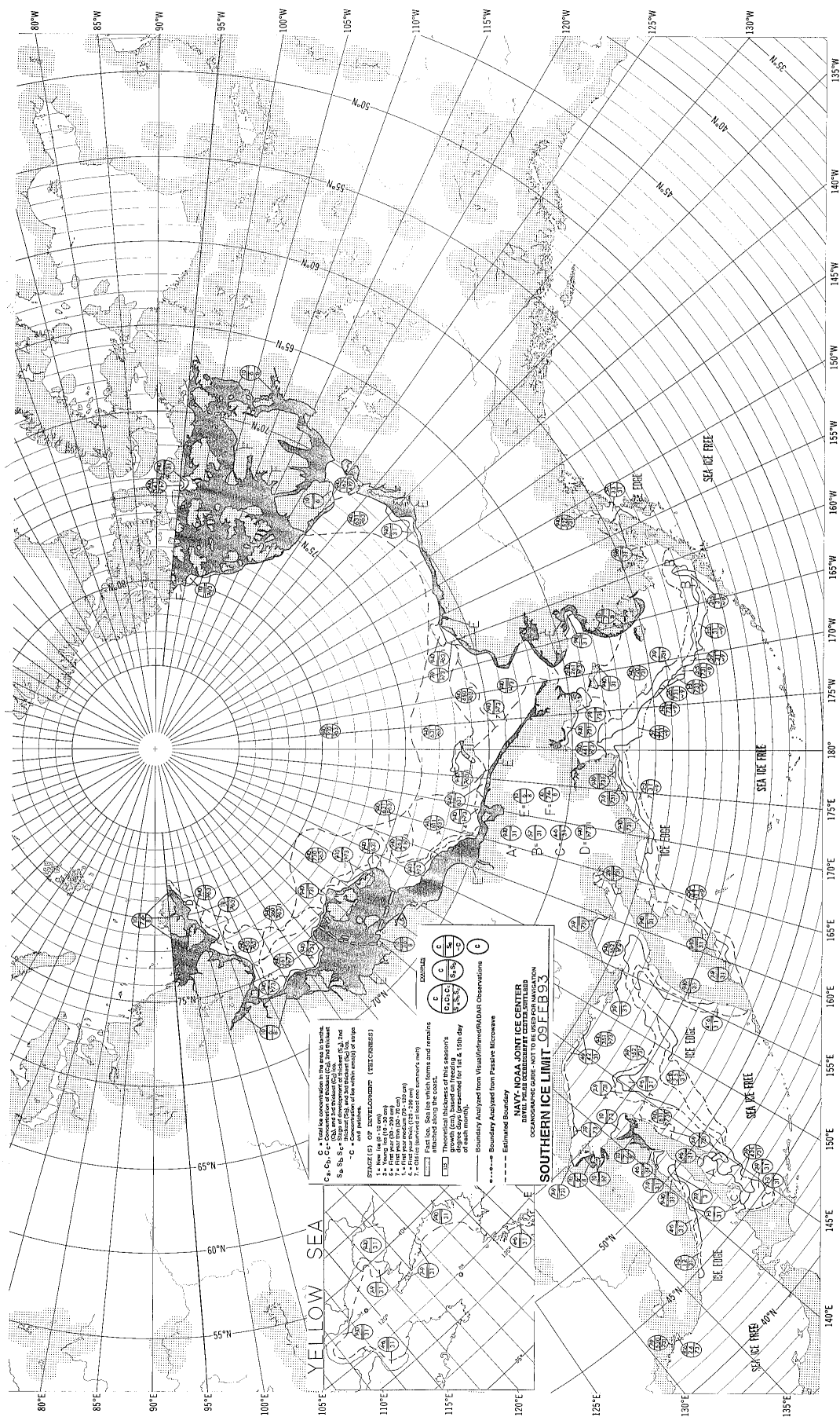
**NAVY/NOAA JOINT ICE CENTER
 NAVAL ICE CENTER
 OCEANOGRAPHIC DATA REPORT FOR NAVIGATION
 SOUTHERN ICE LIMIT 05 JAN 93**

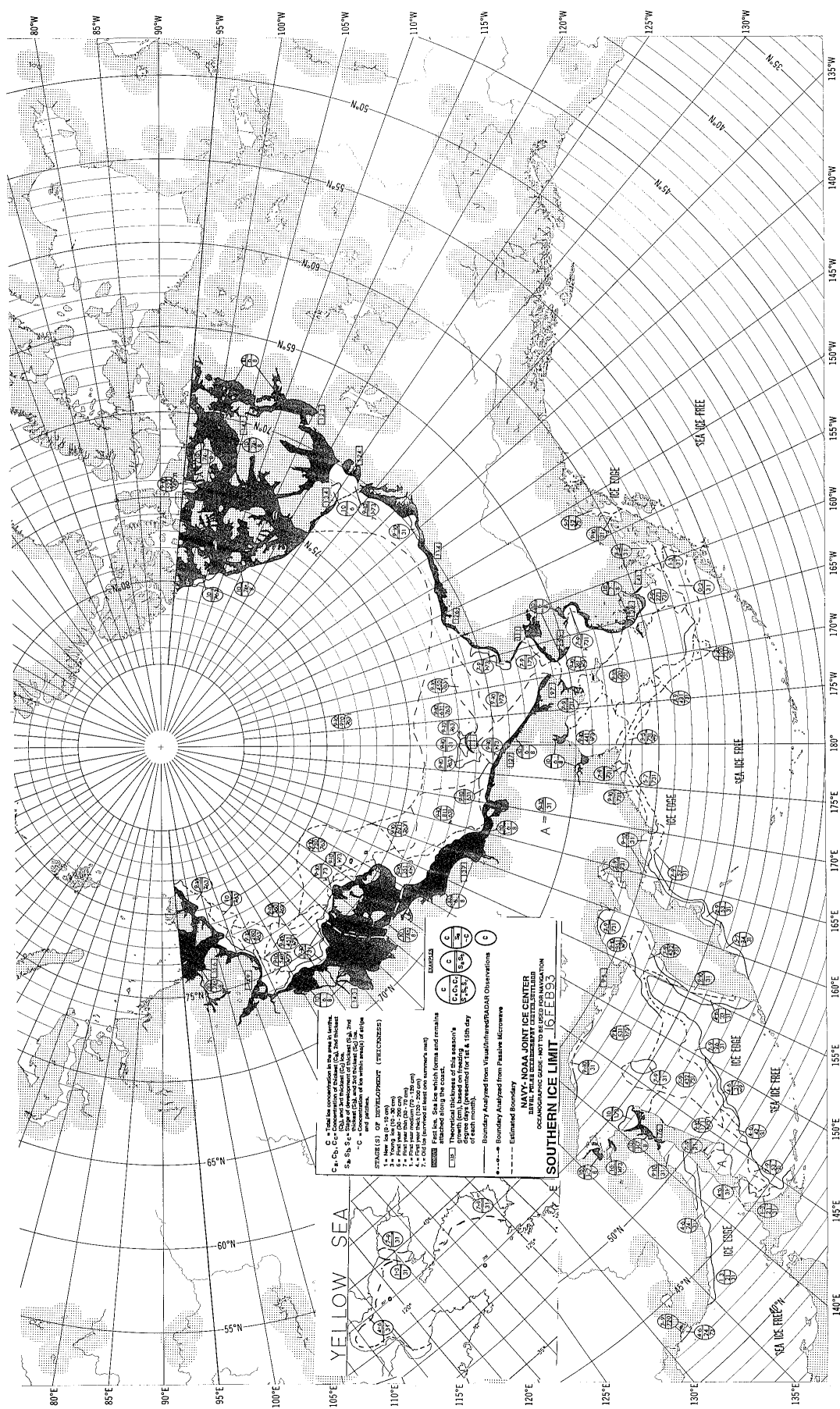


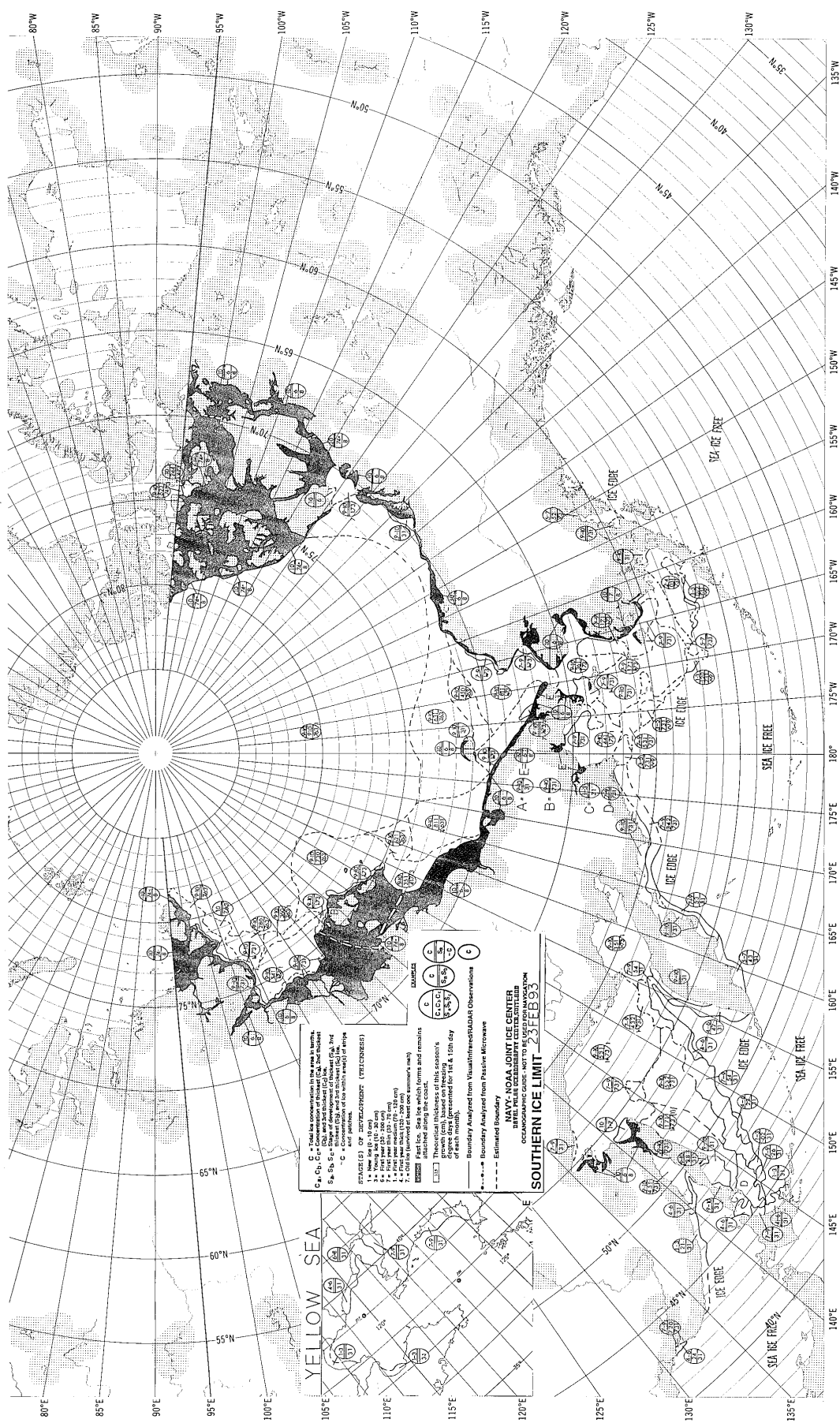


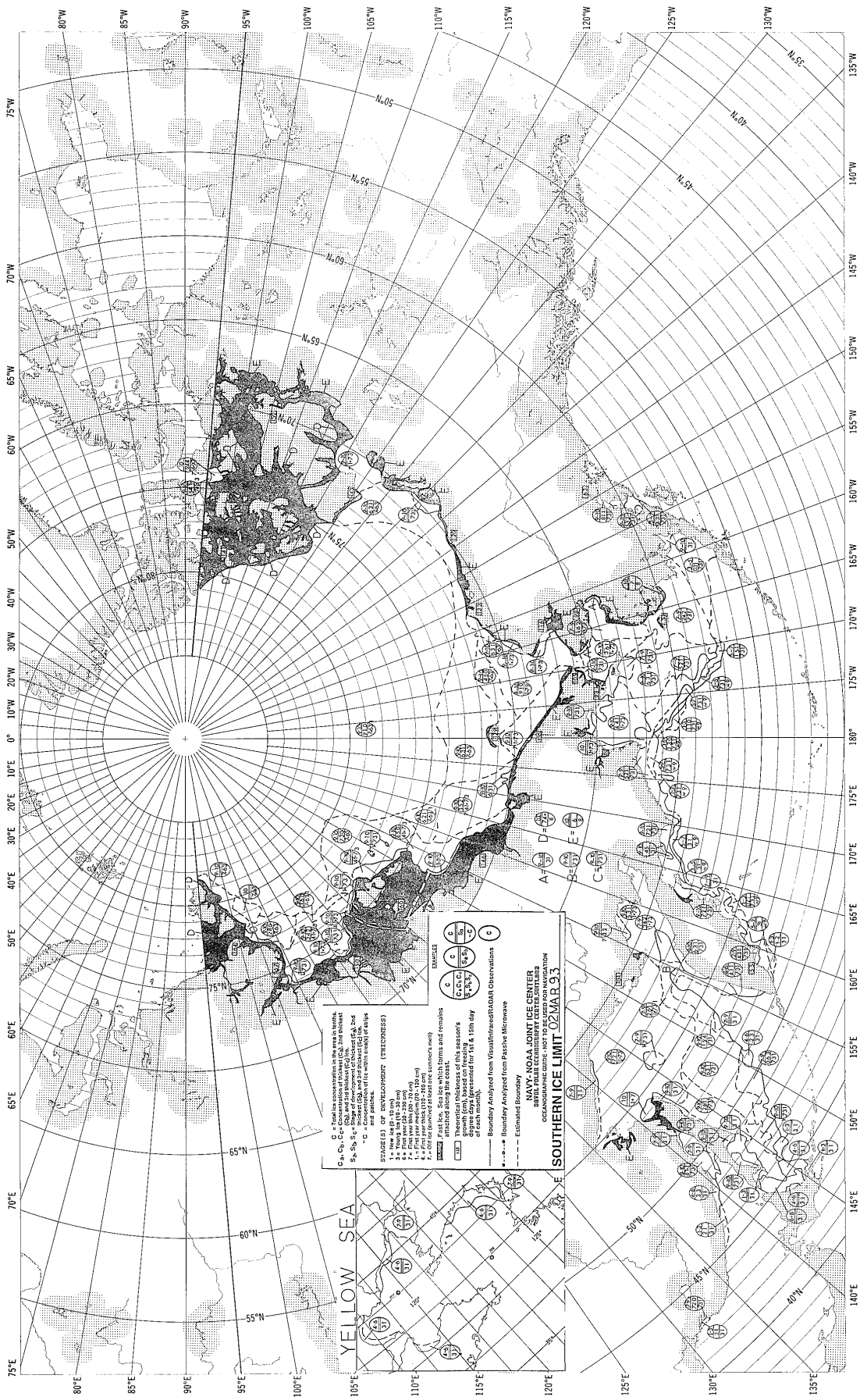


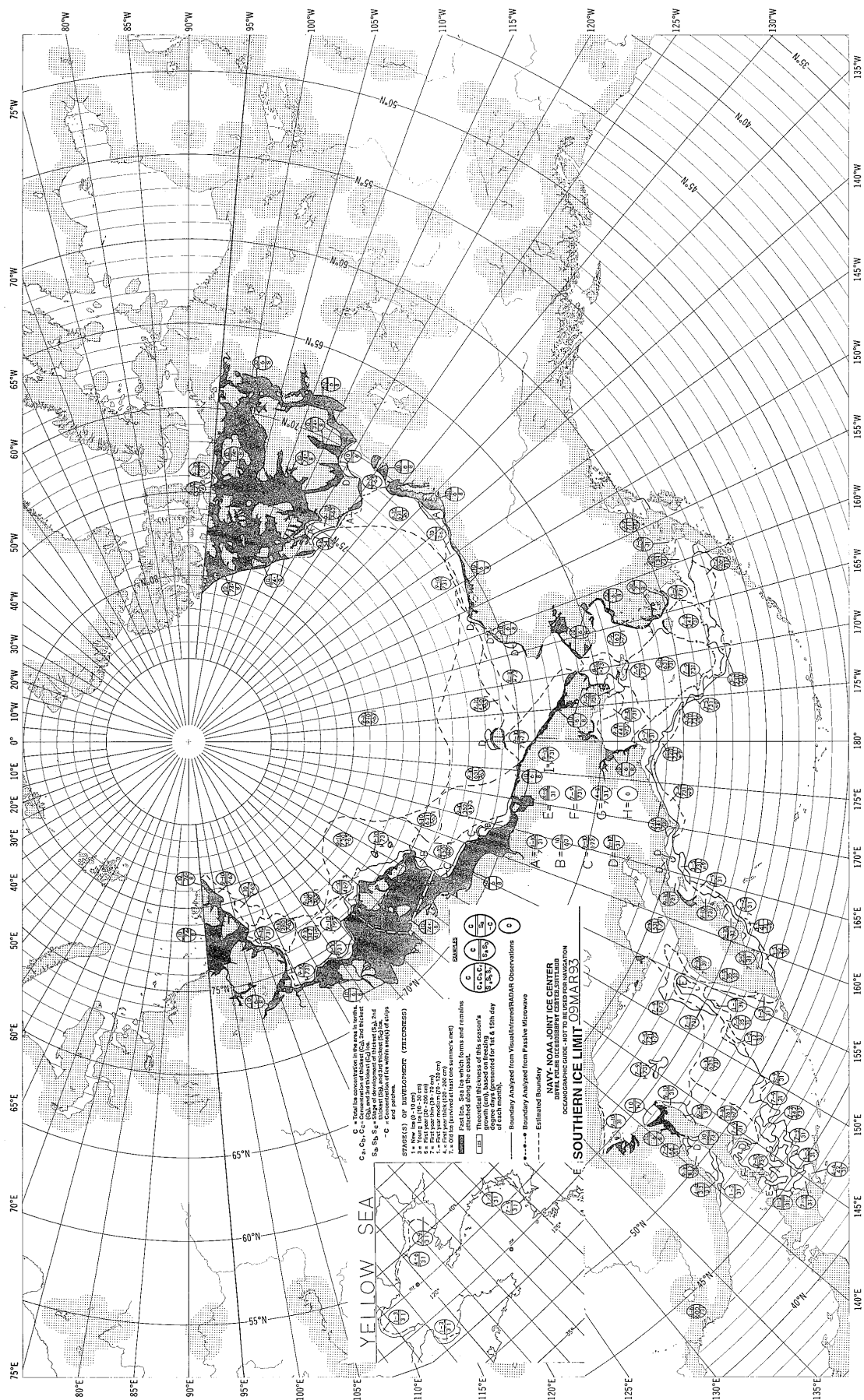


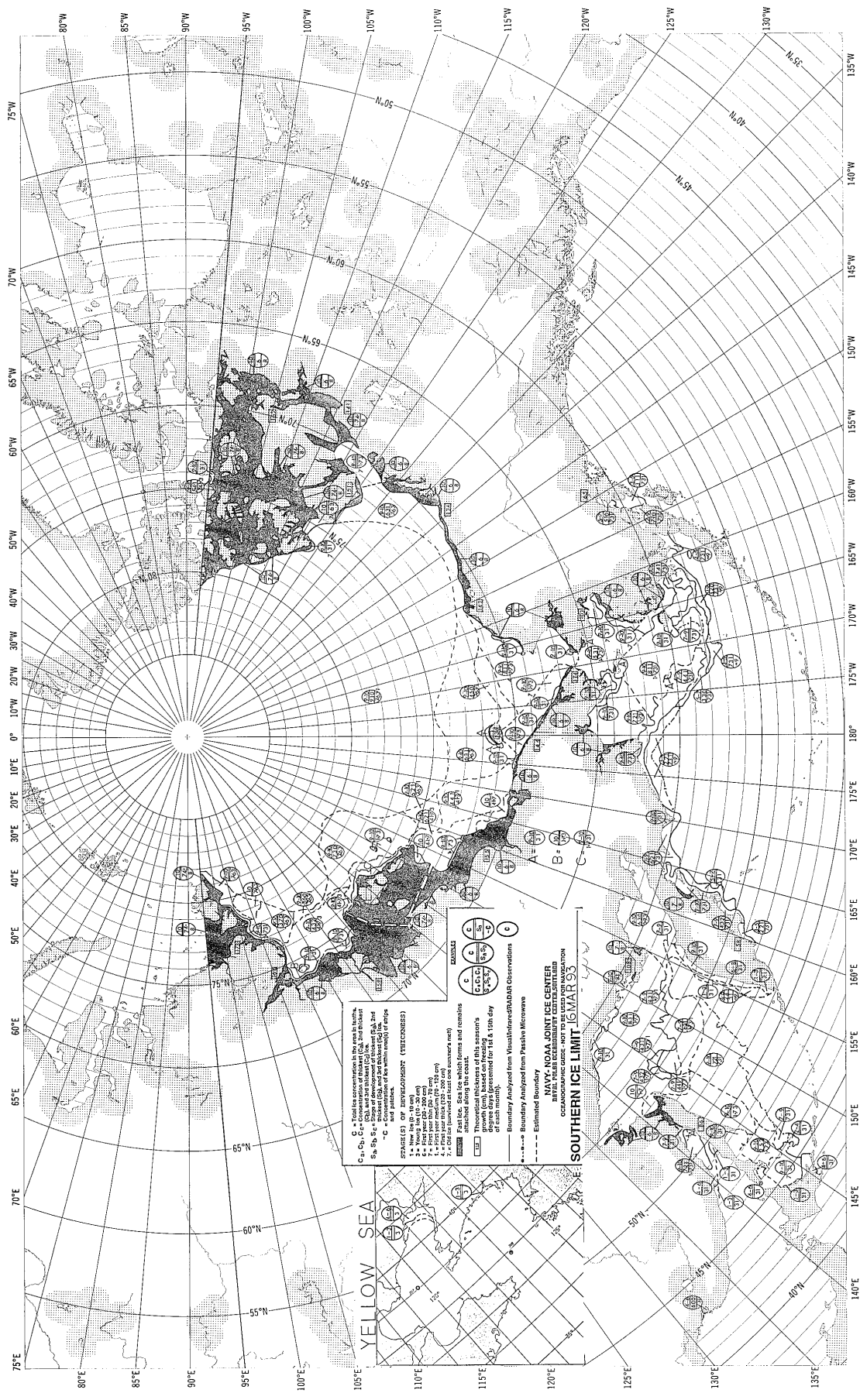


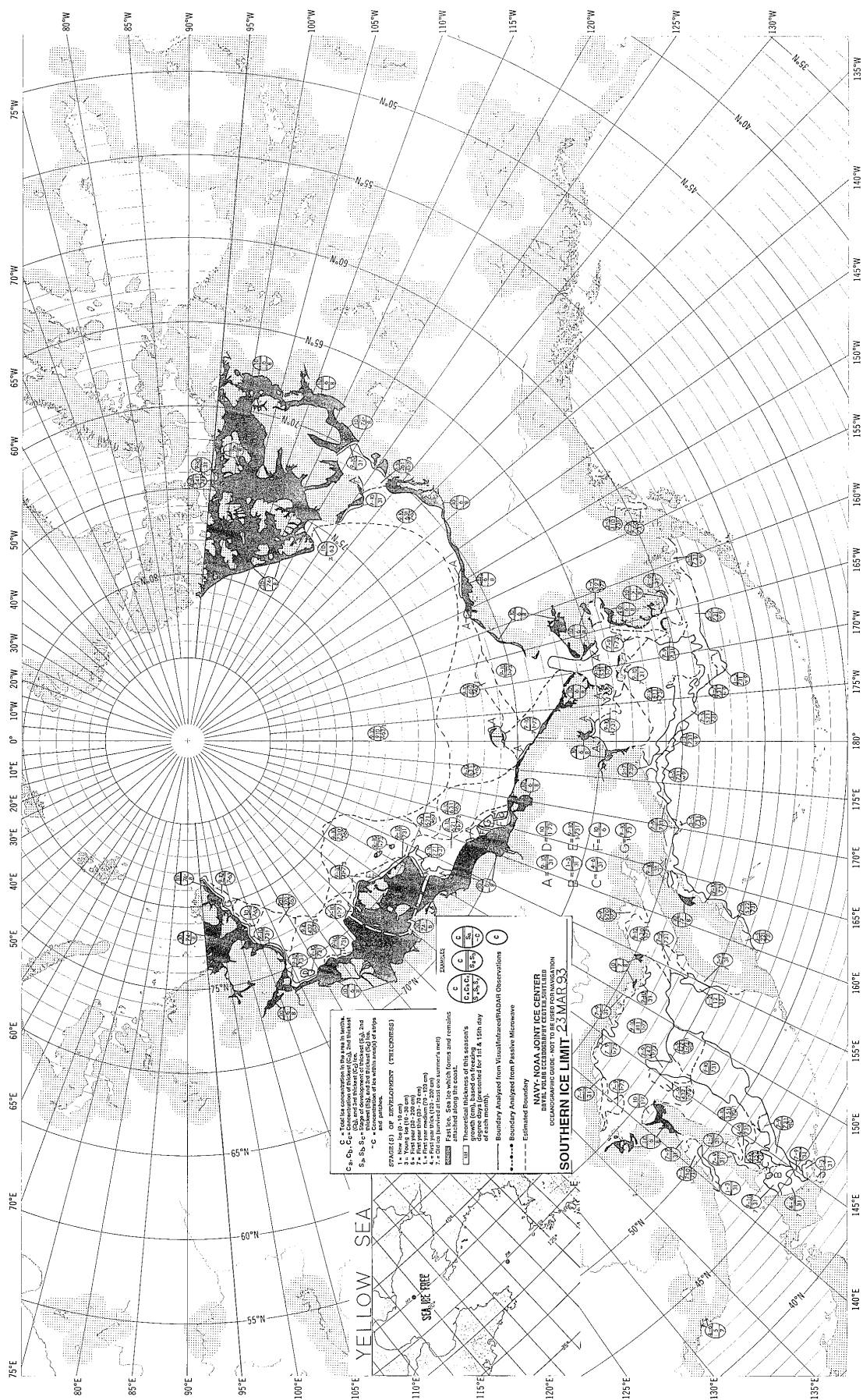


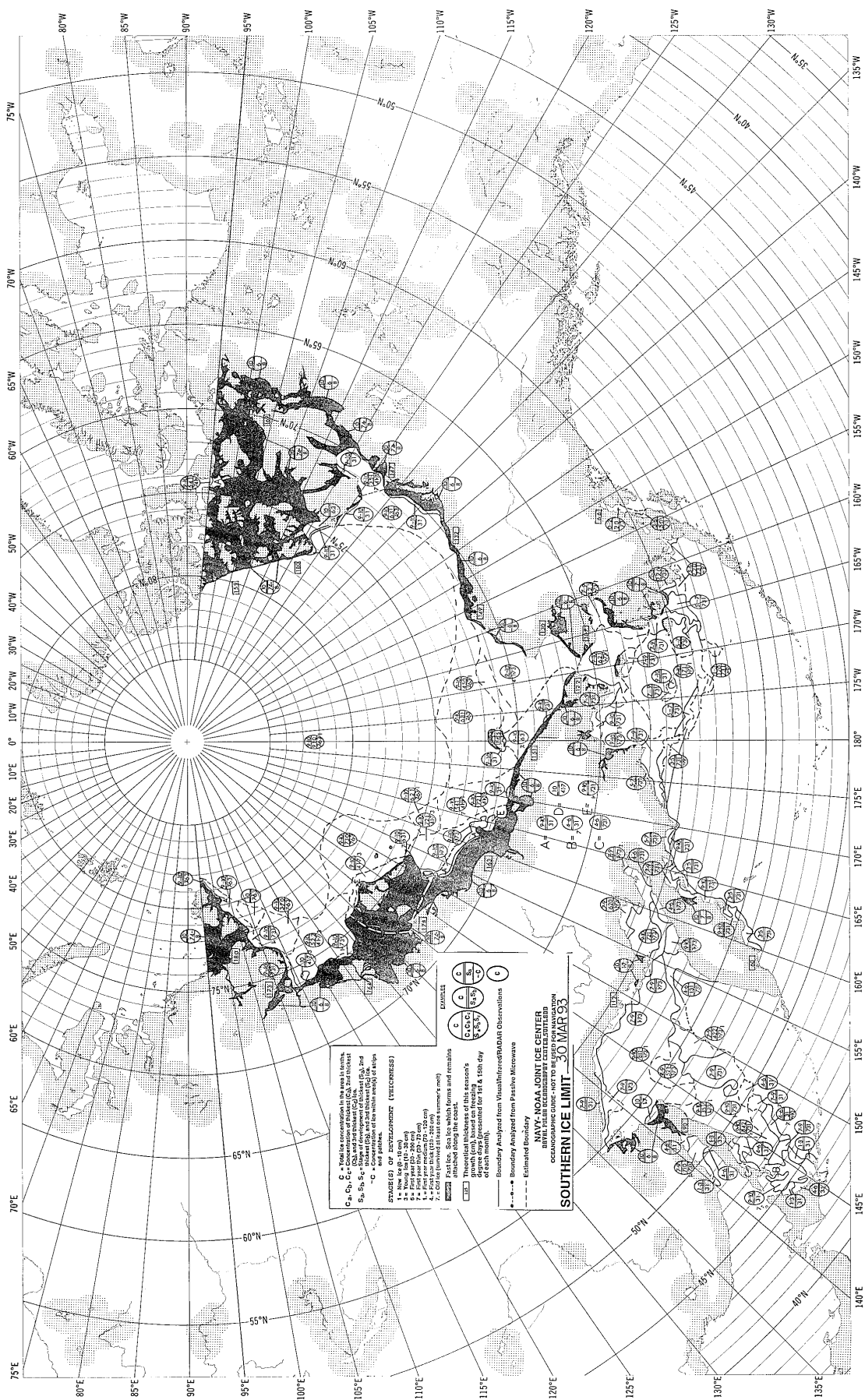




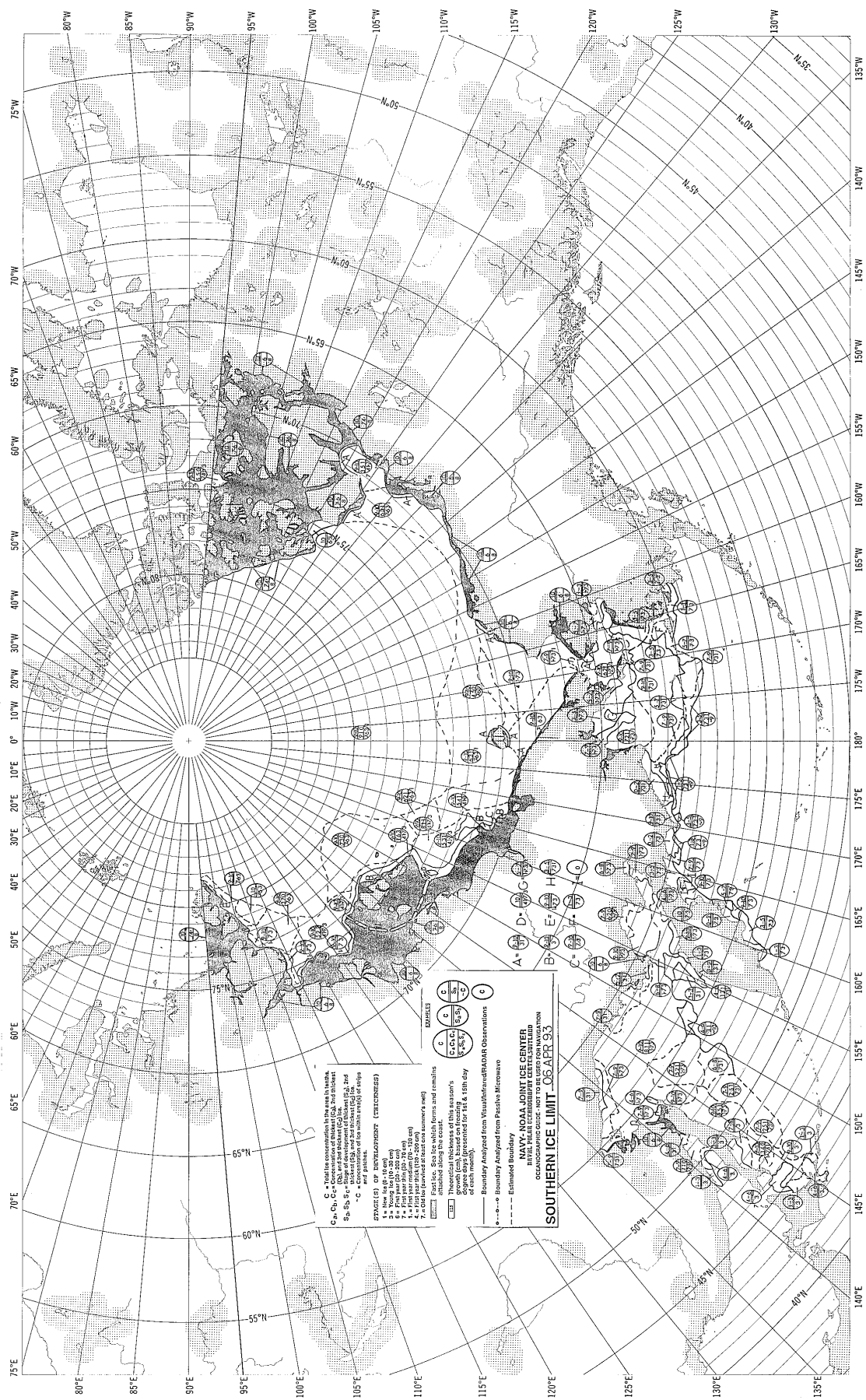


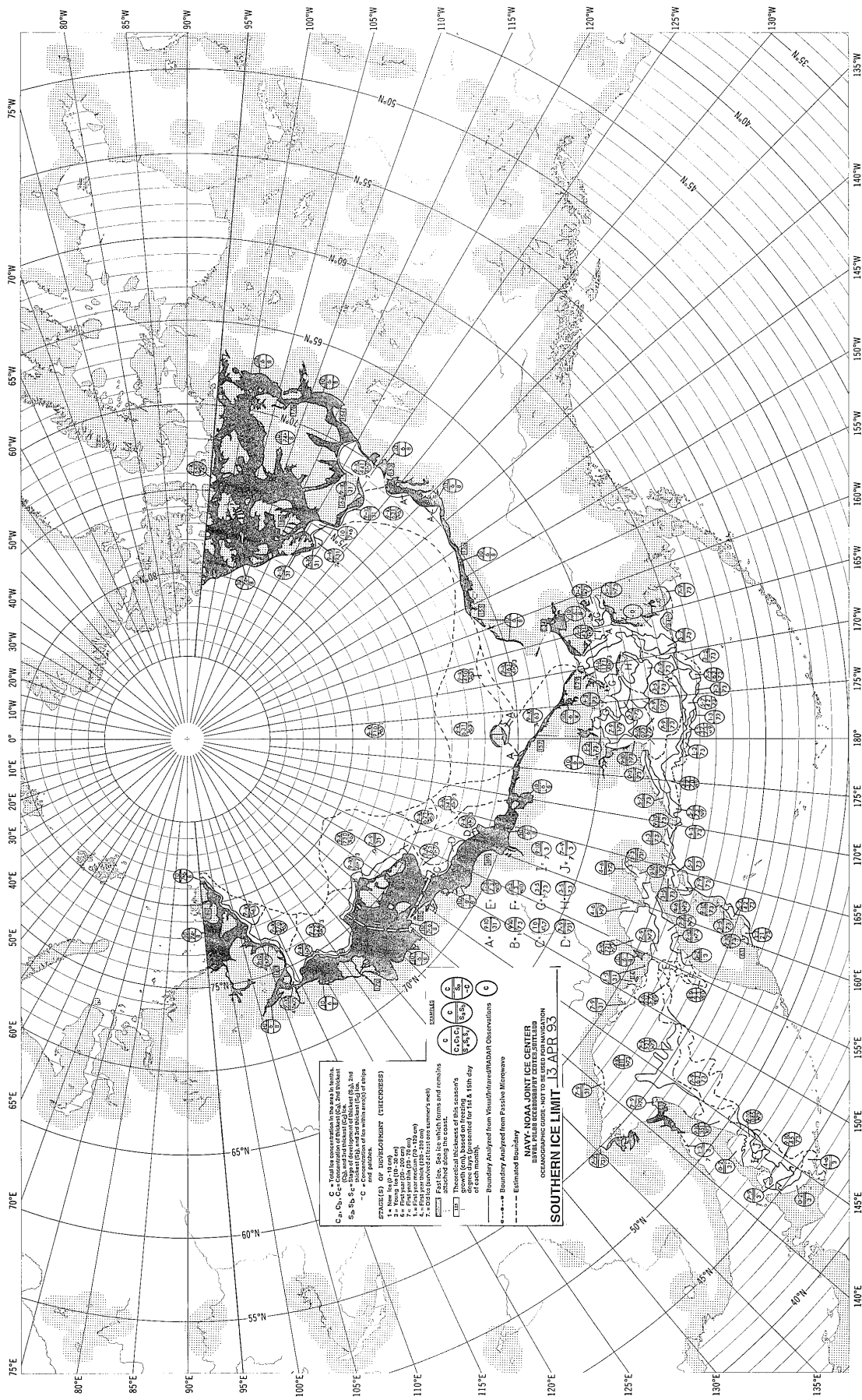


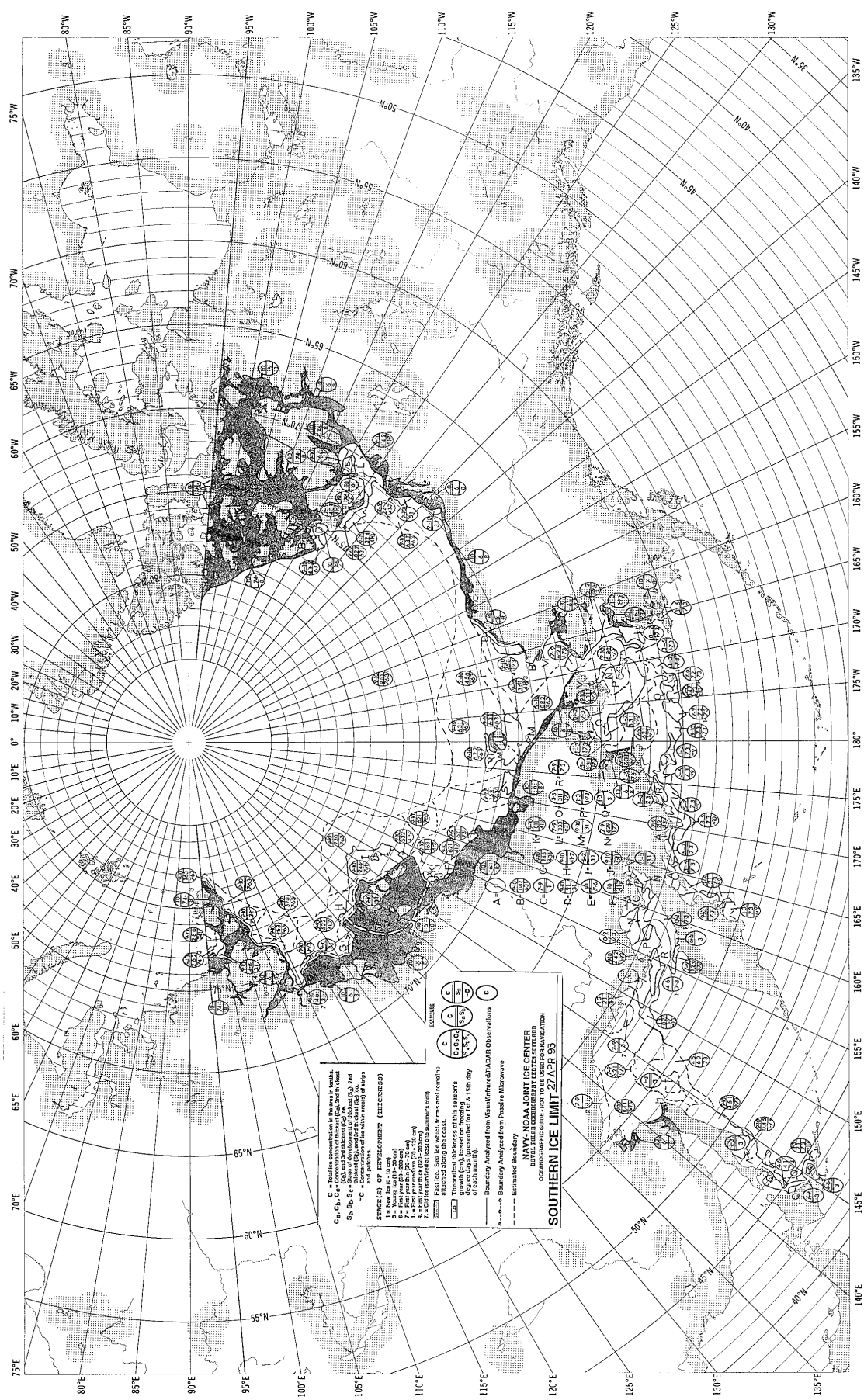


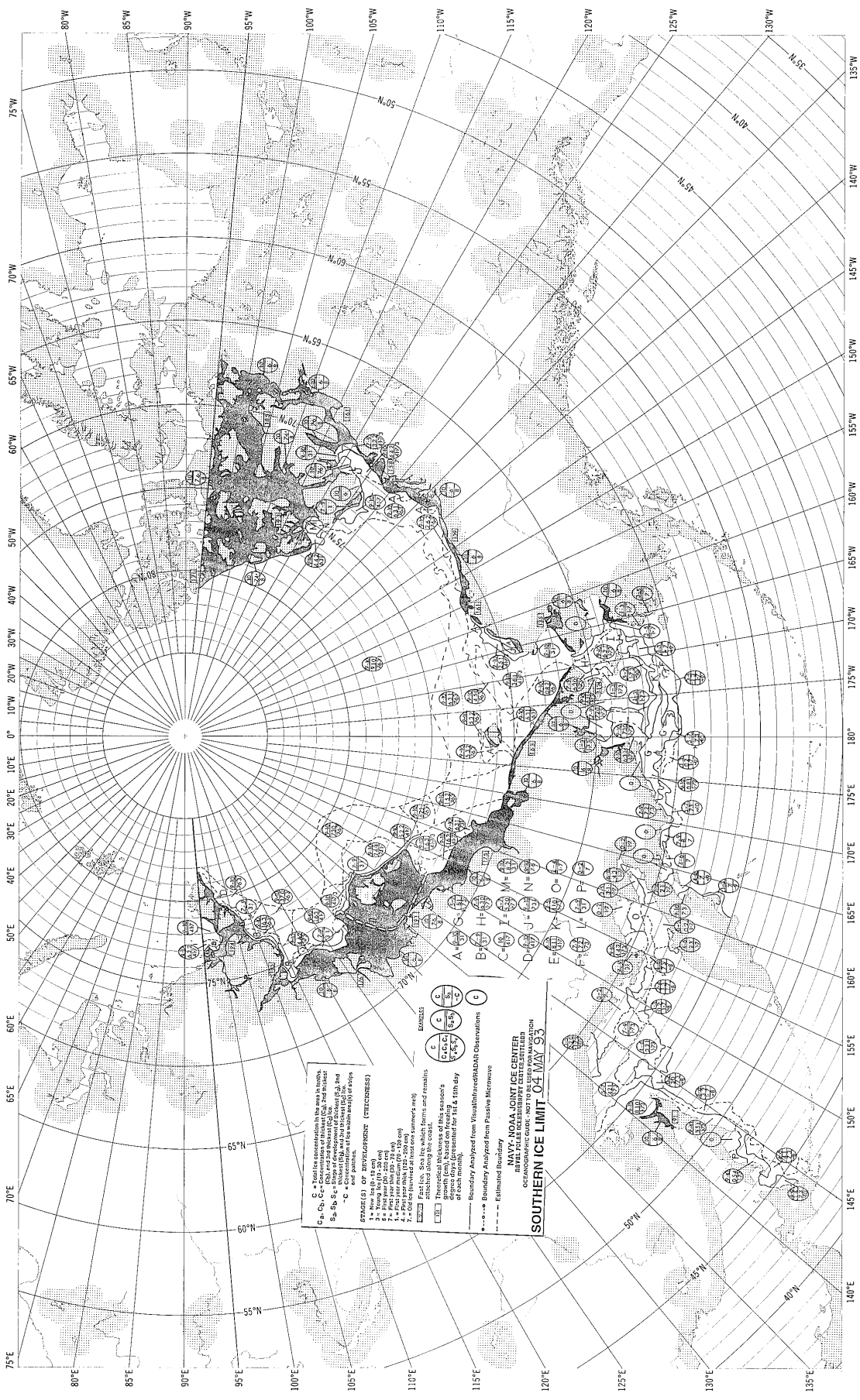


SOUTHERN ICE LIMIT - 30 MAR 93









STAGES OF DEVELOPMENT (THICKNESSES)

C₁ - C₄ = Total ice concentration in the area in tenths, (C₁ = 10%, C₂ = 20%, C₃ = 30%, C₄ = 40%)
S₁ - S₄ = Ice thickness in feet (S₁ = 1 ft, S₂ = 2 ft, S₃ = 3 ft, S₄ = 4 ft)
C₁ S₁ = 10% concentration of 1 ft ice
C₂ S₂ = 20% concentration of 2 ft ice
C₃ S₃ = 30% concentration of 3 ft ice
C₄ S₄ = 40% concentration of 4 ft ice

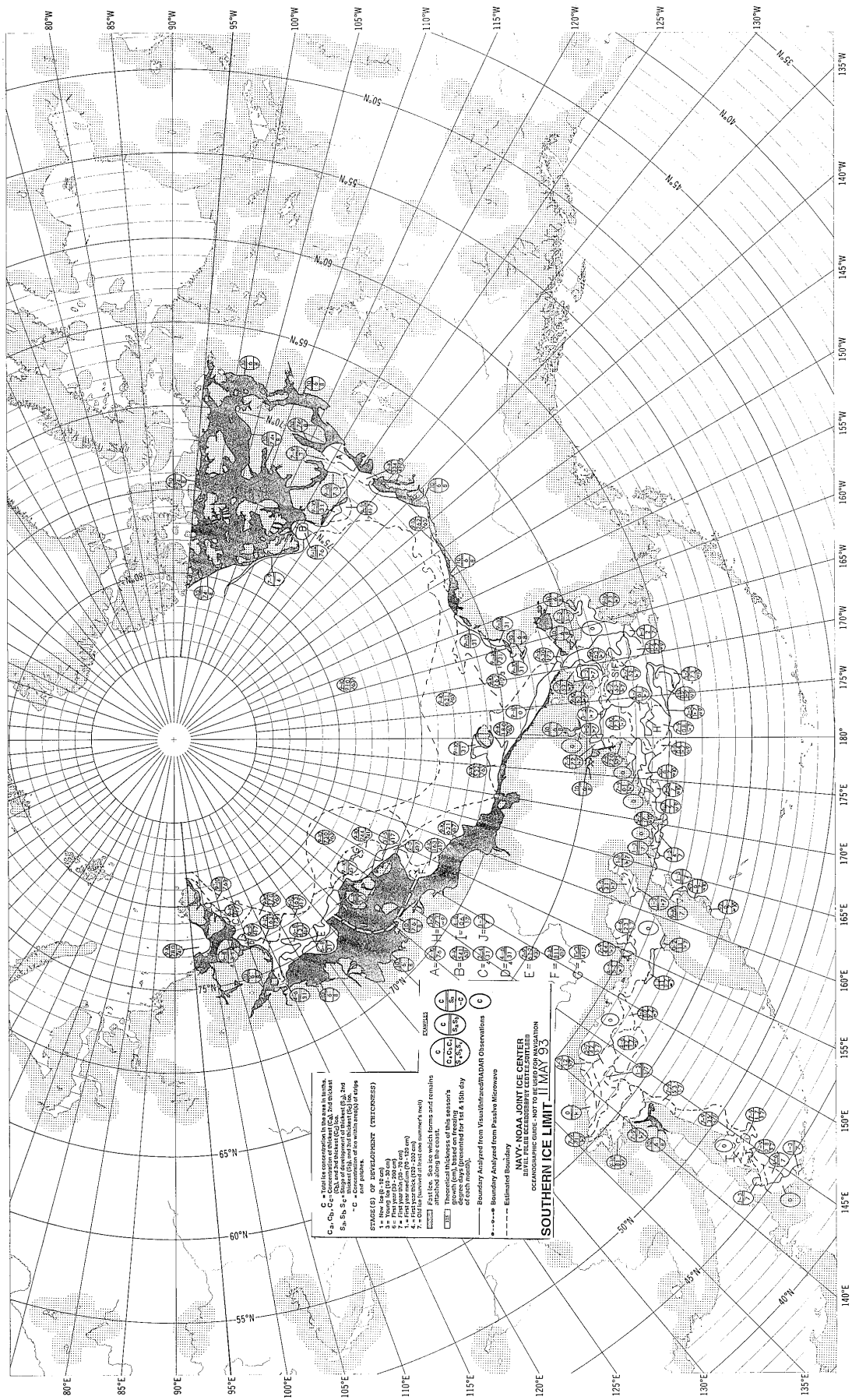
STAGES OF DEVELOPMENT (THICKNESSES)

1 = Young Ice (1st - 3rd year)
2 = Young Ice (4th - 5th year)
3 = Old Ice (6th - 7th year)
4 = Old Ice (8th - 9th year)
5 = Old Ice (10th - 11th year)
6 = Old Ice (12th - 13th year)
7 = Old Ice (14th - 15th year)
8 = Old Ice (16th - 17th year)
9 = Old Ice (18th - 19th year)
10 = Old Ice (20th - 21st year)

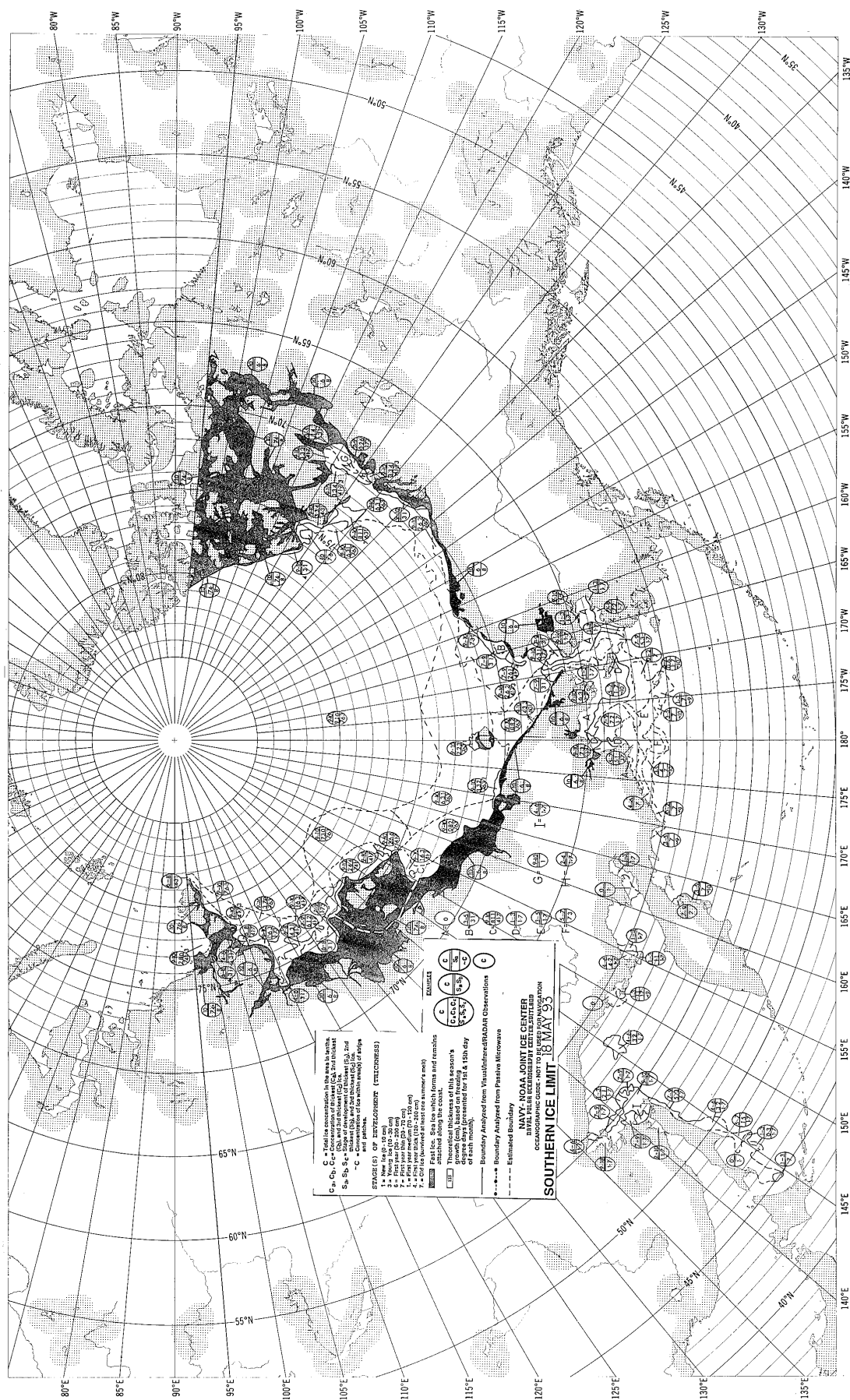
STAGES OF DEVELOPMENT (THICKNESSES)

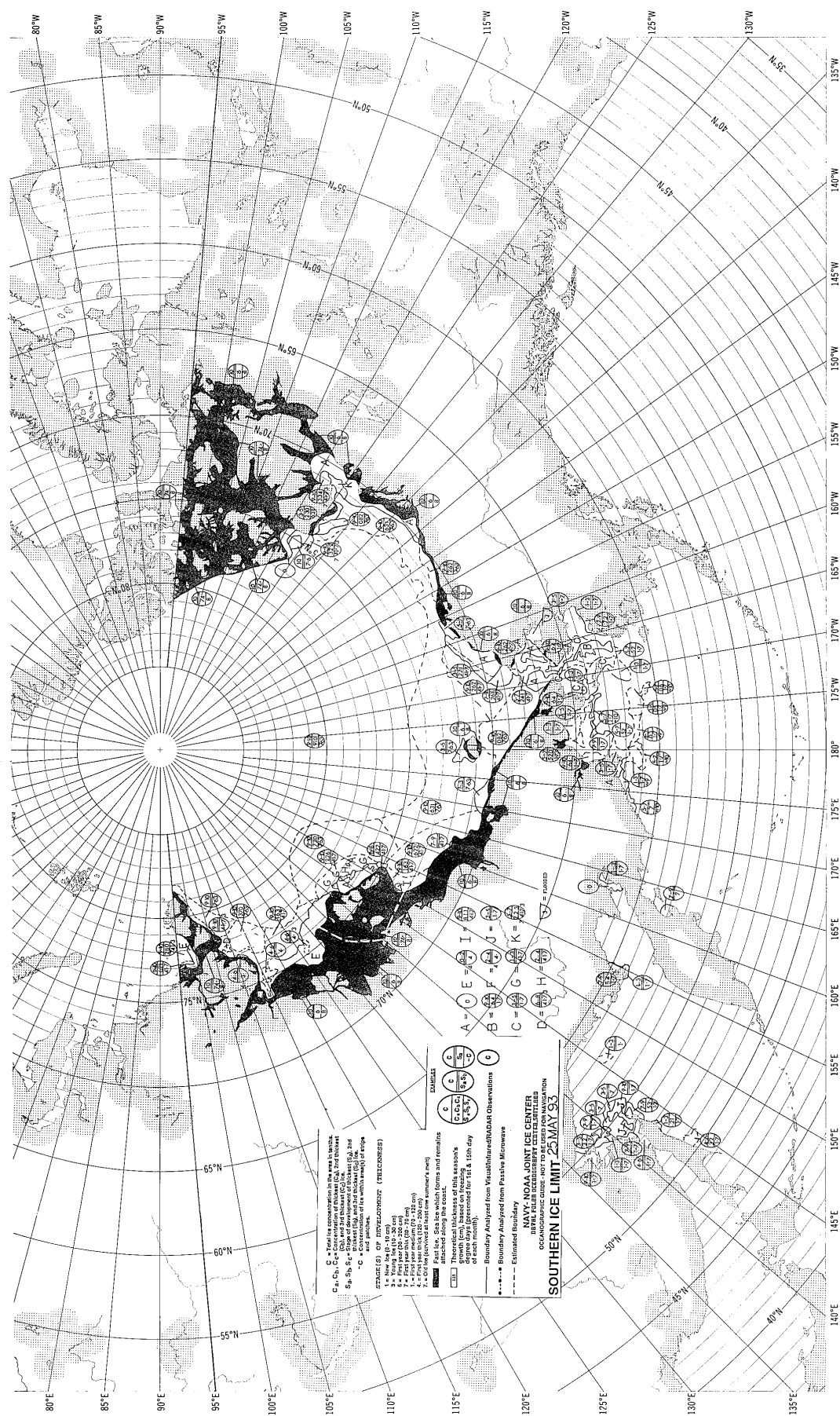
1 = Young Ice (1st - 3rd year)
2 = Young Ice (4th - 5th year)
3 = Old Ice (6th - 7th year)
4 = Old Ice (8th - 9th year)
5 = Old Ice (10th - 11th year)
6 = Old Ice (12th - 13th year)
7 = Old Ice (14th - 15th year)
8 = Old Ice (16th - 17th year)
9 = Old Ice (18th - 19th year)
10 = Old Ice (20th - 21st year)

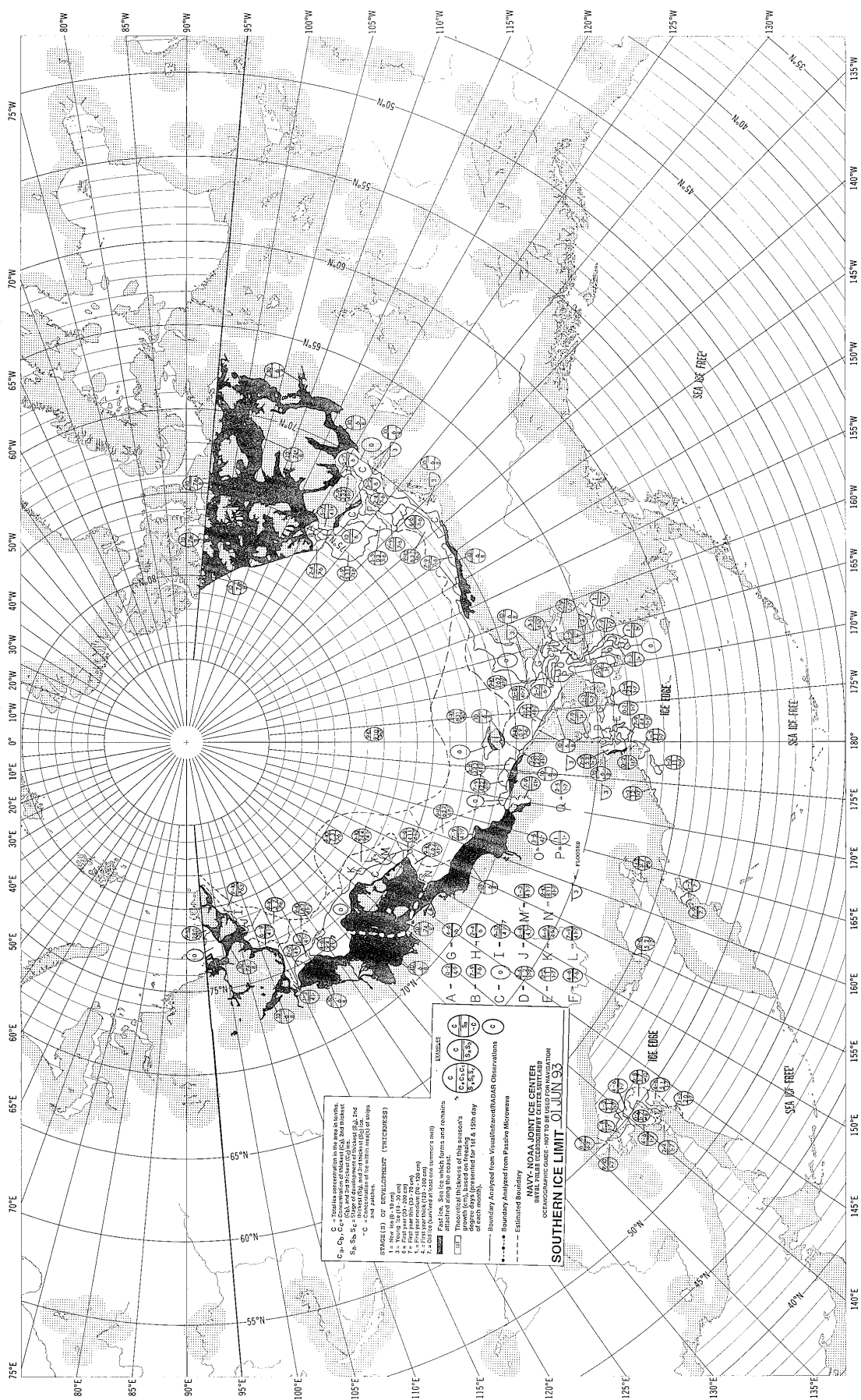
NAVY-NOAA JOINT ICE CENTER
ICE INFORMATION CENTER
OCEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION
SOUTHERN ICE LIMIT 04 MAY 93

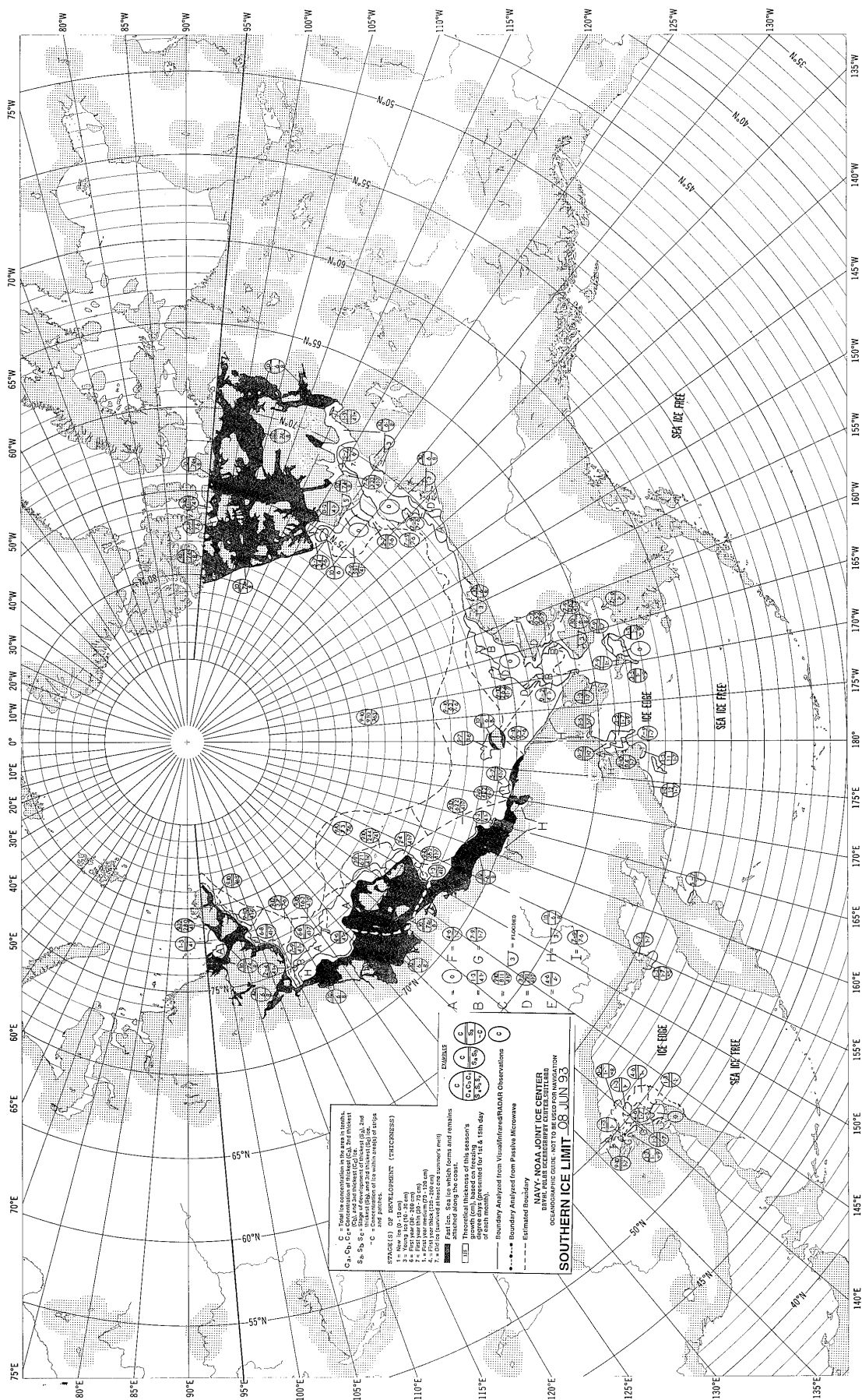


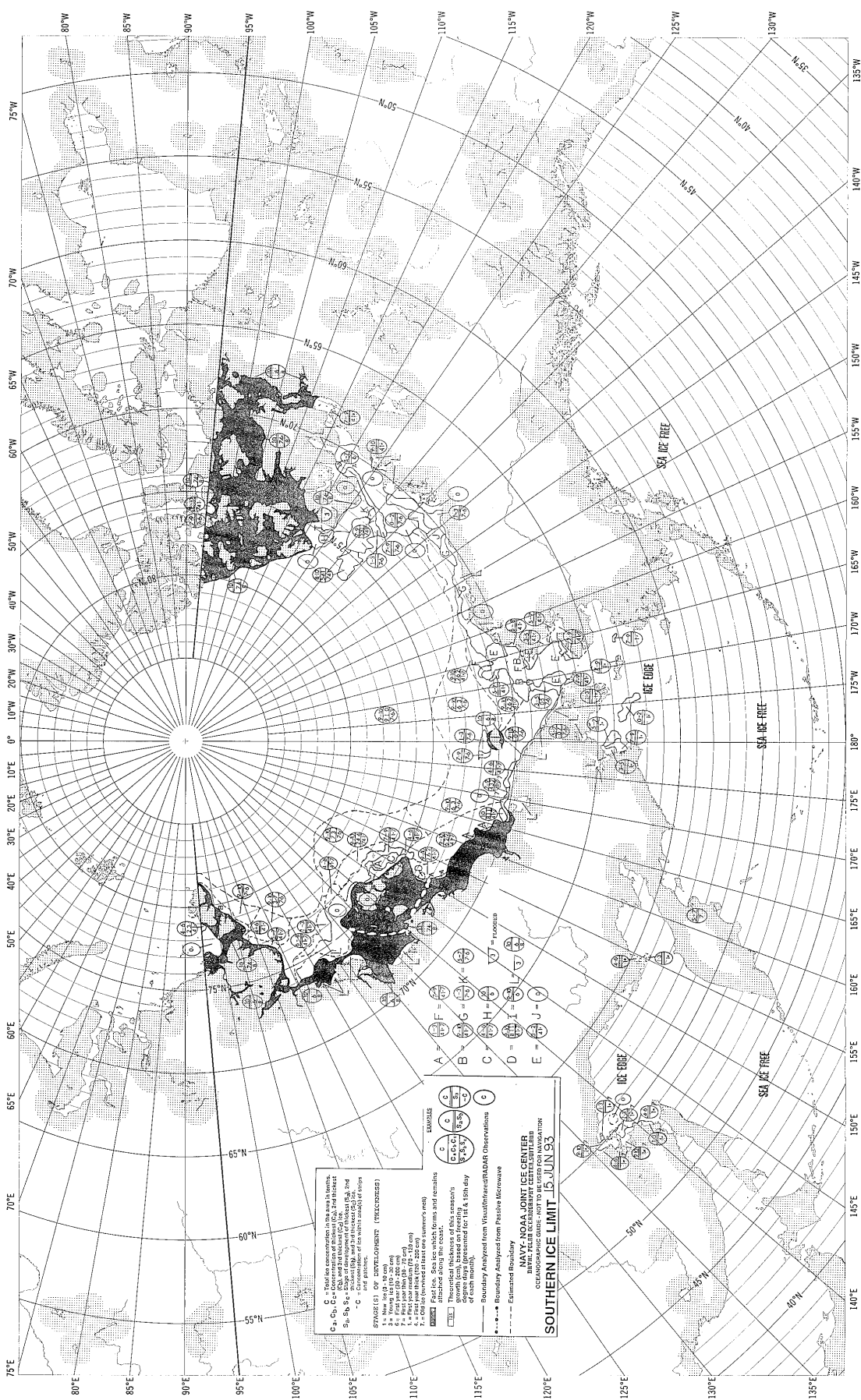
NORTH ATLANTIC JOINT ICE CENTER
 1000 N. ALABAMA AVE., SUITE 100
 OCEANOGRAPHIC GUIDE, NOT TO BE USED FOR NAVIGATION
SOUTHERN ICE LIMIT - 11 MAY 93



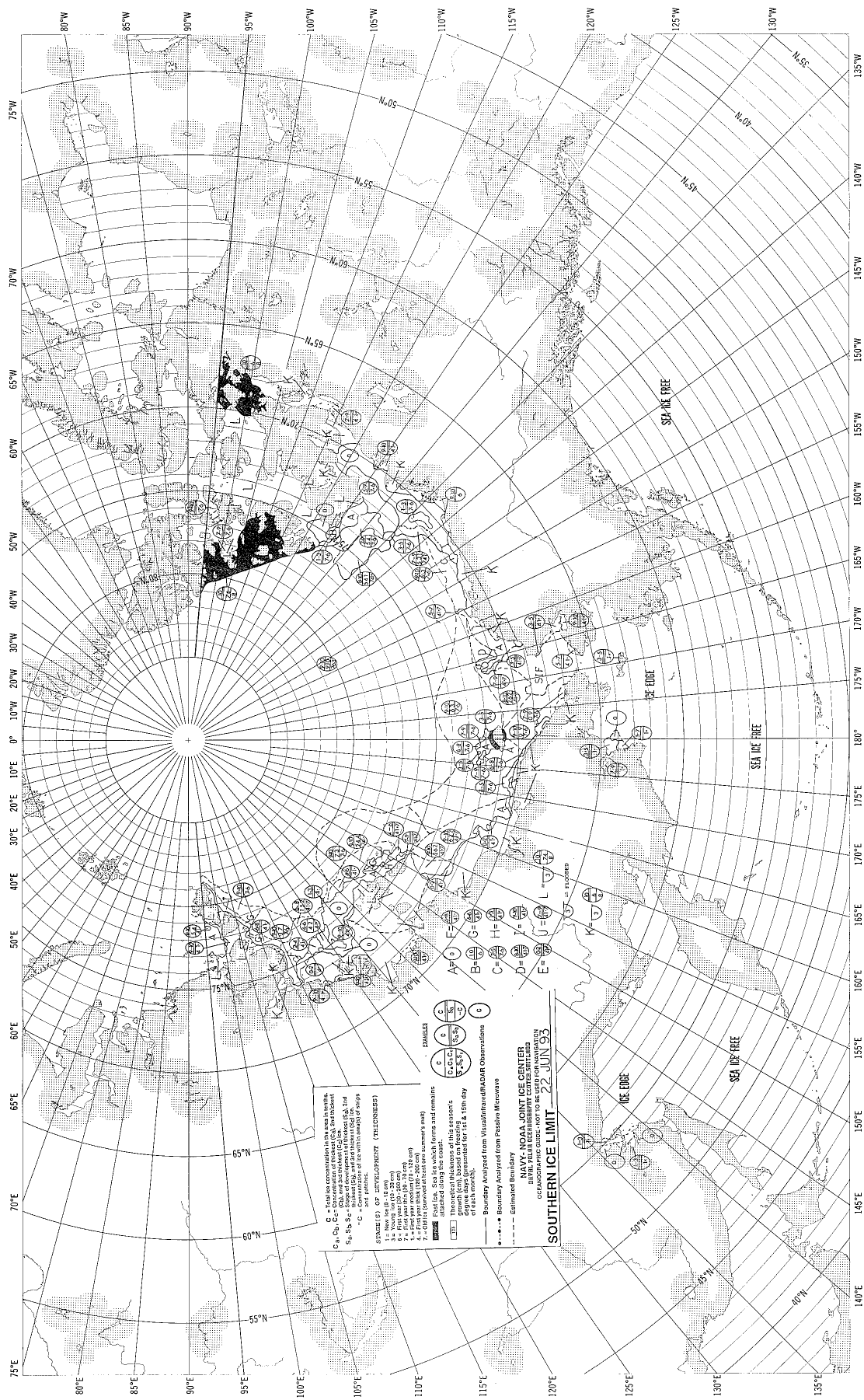


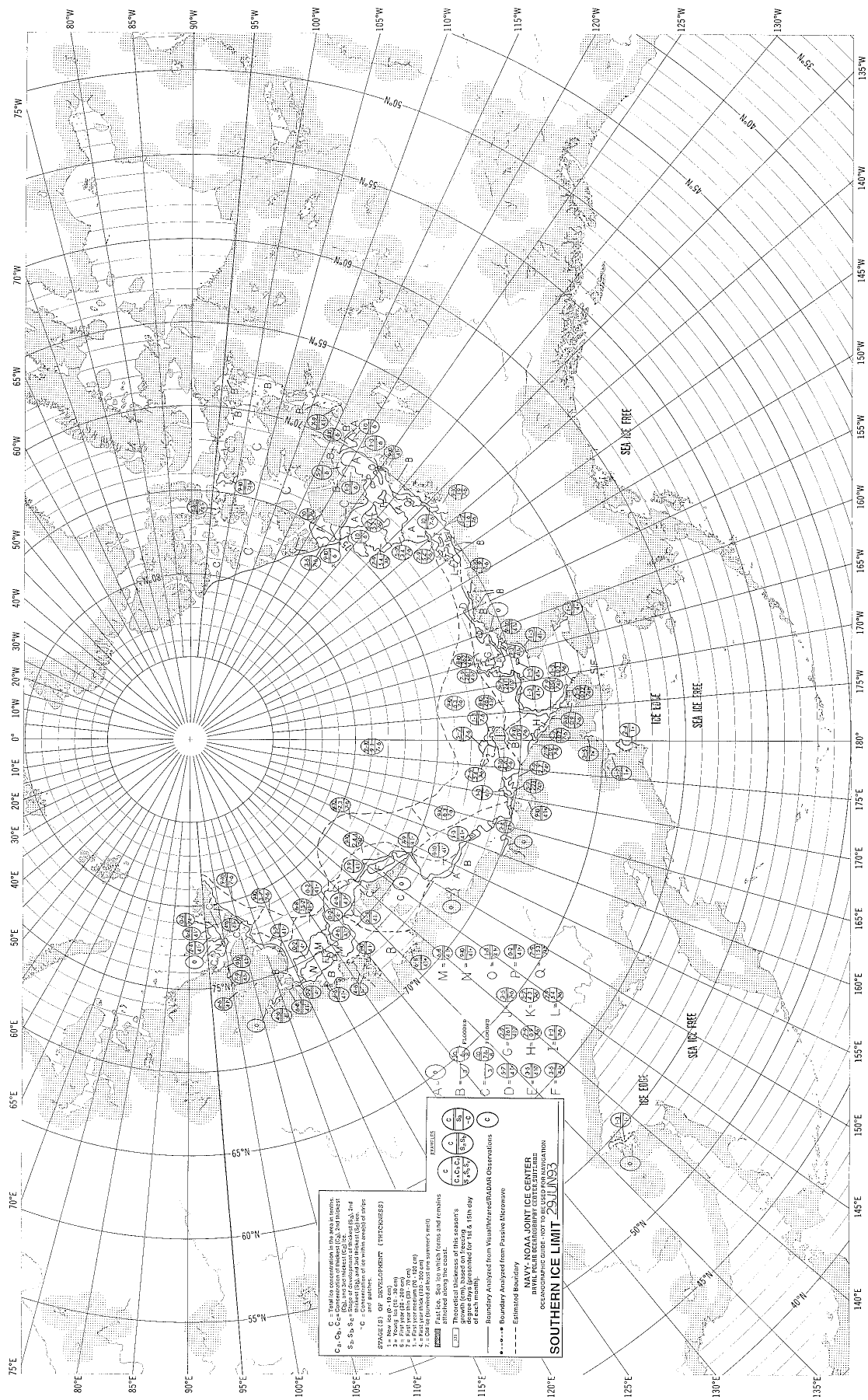


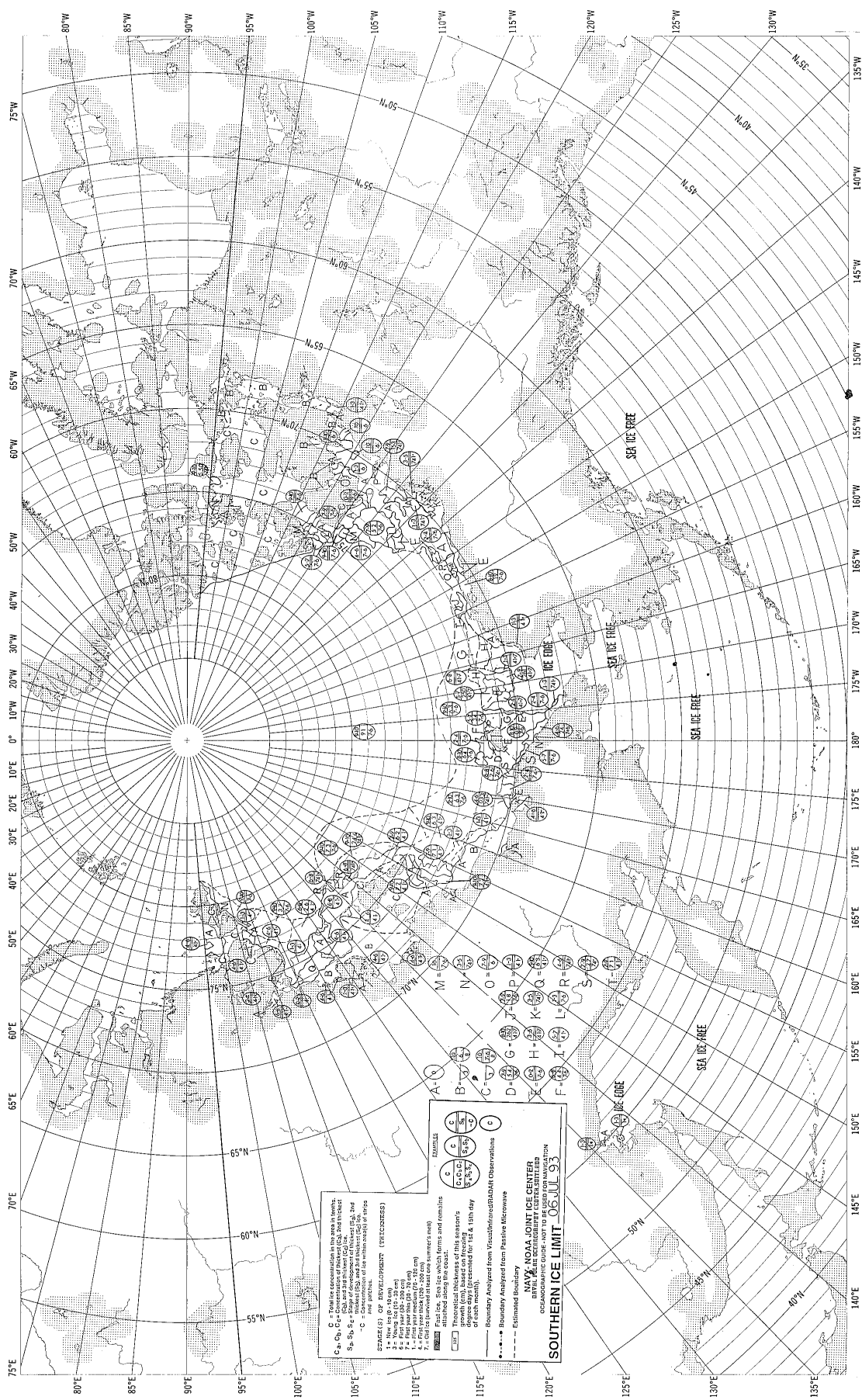


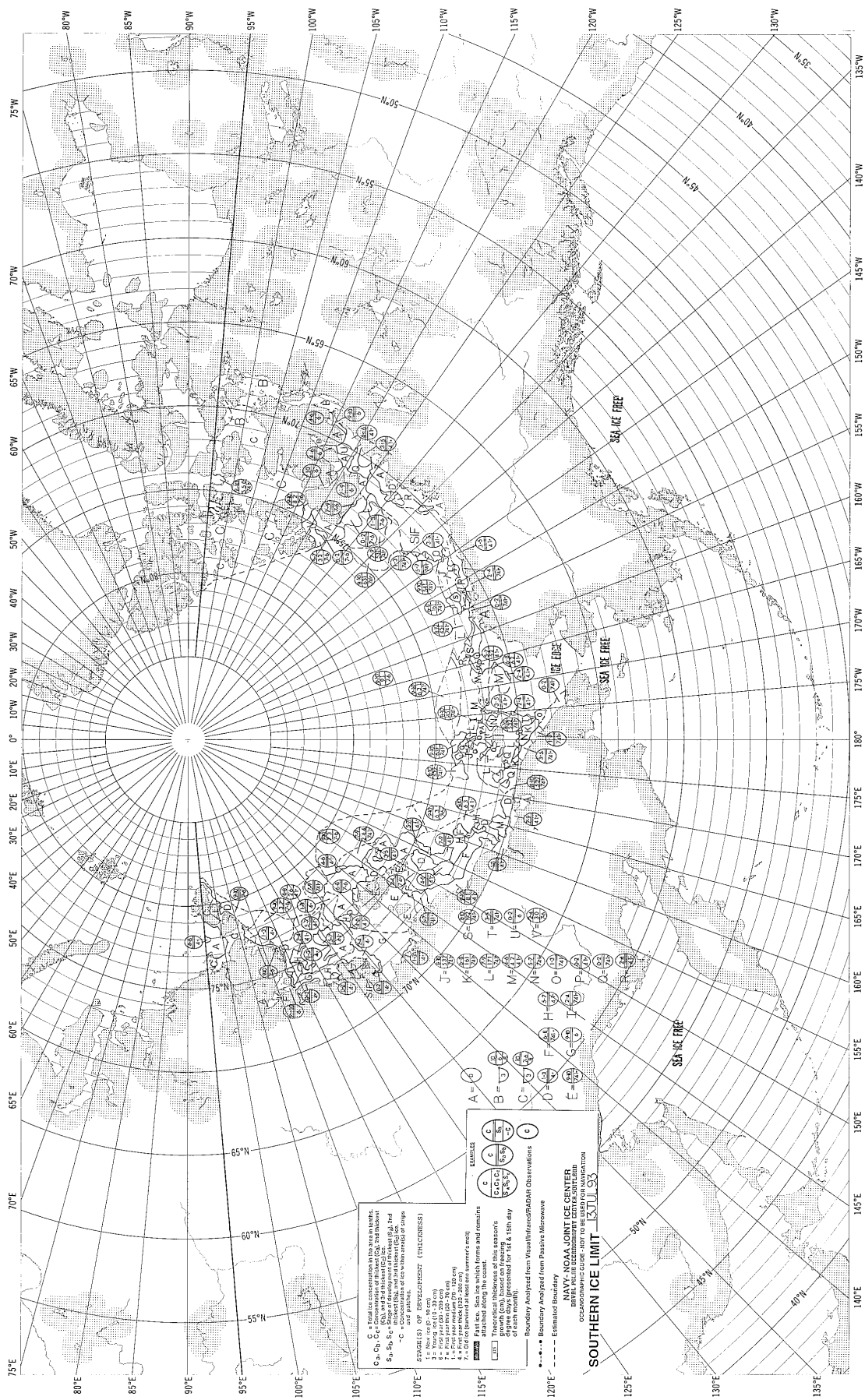


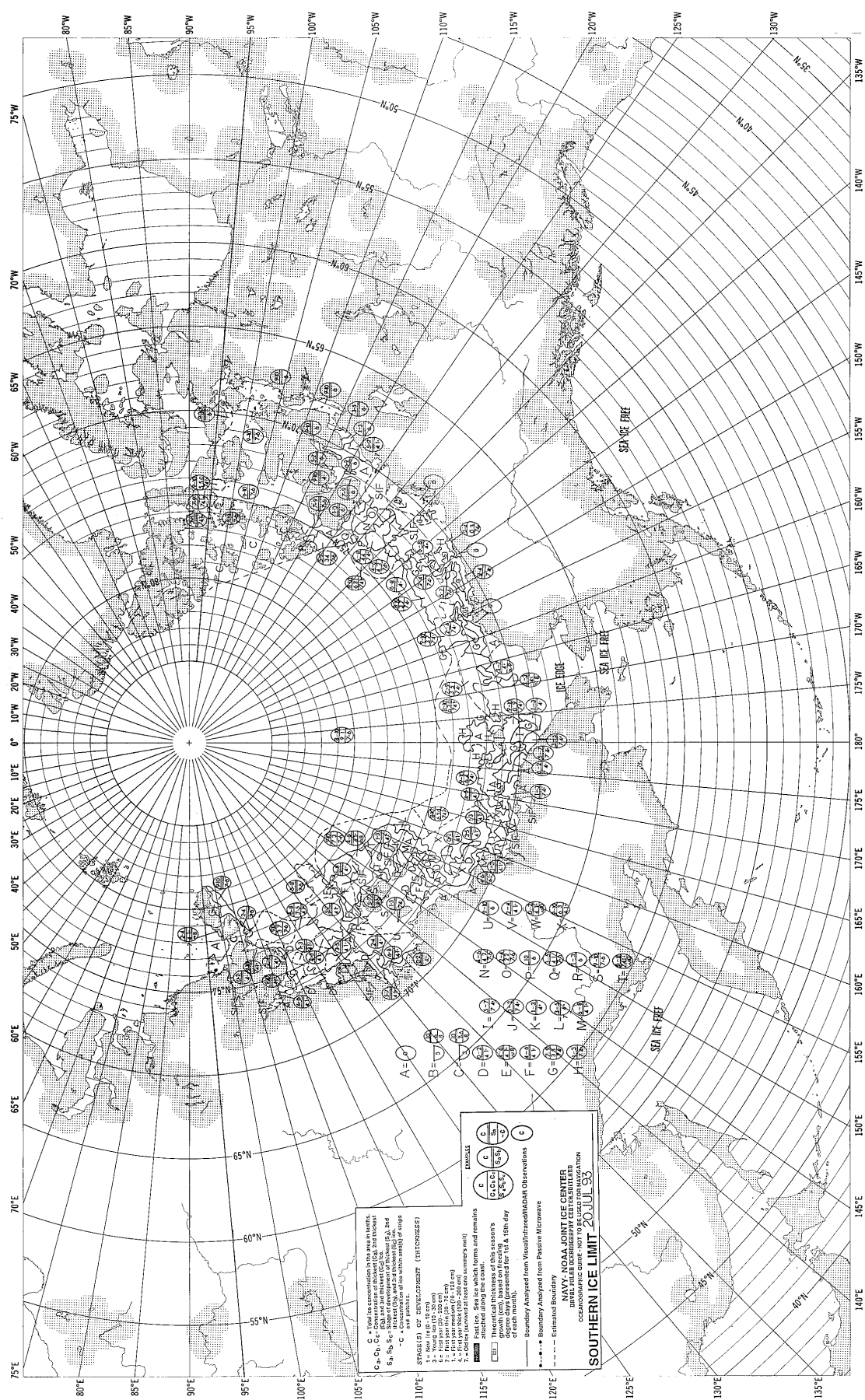
NAVY-NOAA JOINT ICE CENTER
DRYD, PLEB OCCASIONALLY CENTER SUIT AND
CEANOGRAPHIC GUIDE - NOT TO BE USED FOR NAVIGATION
ERN ICE LIMIT 15 JUN 93

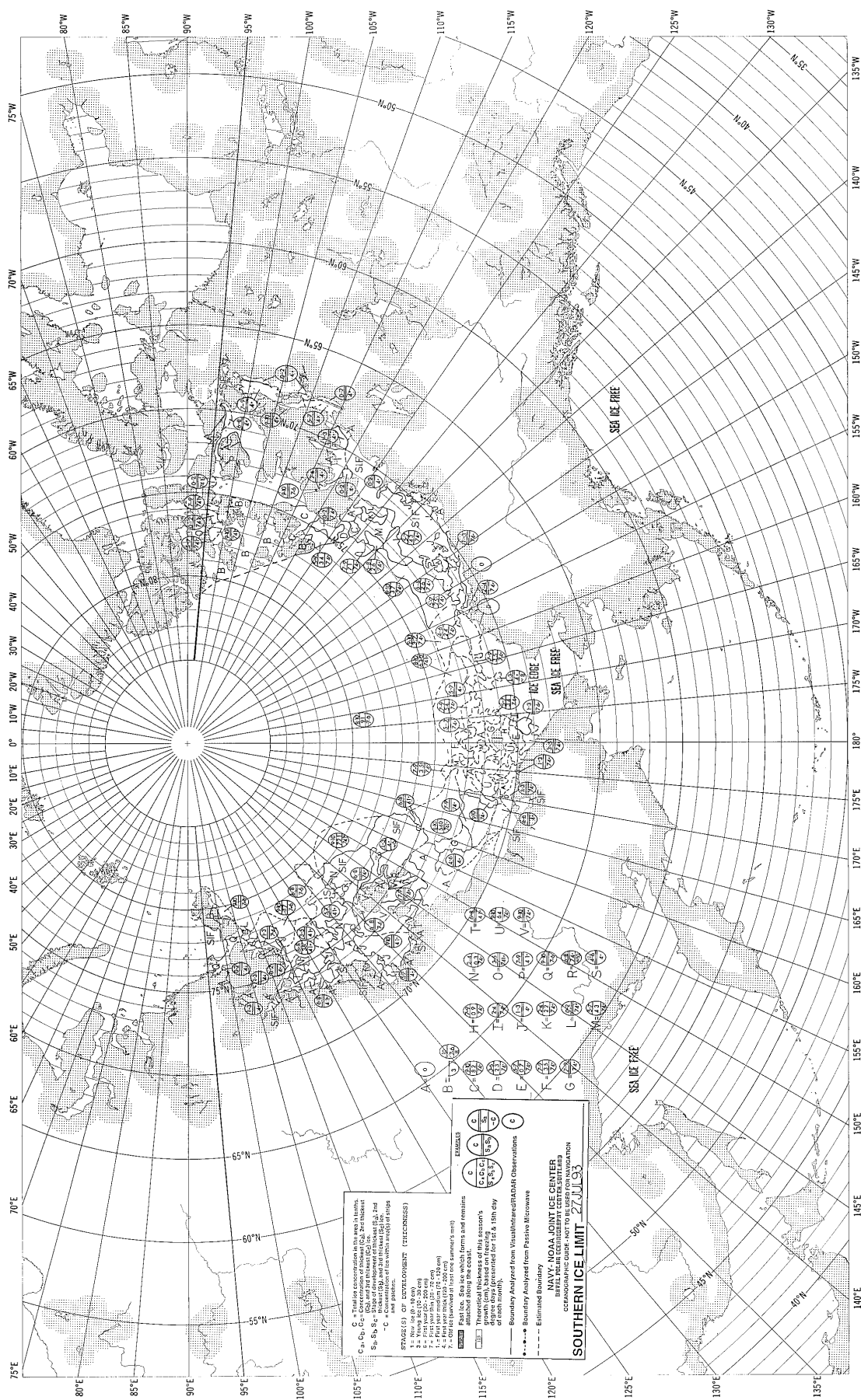


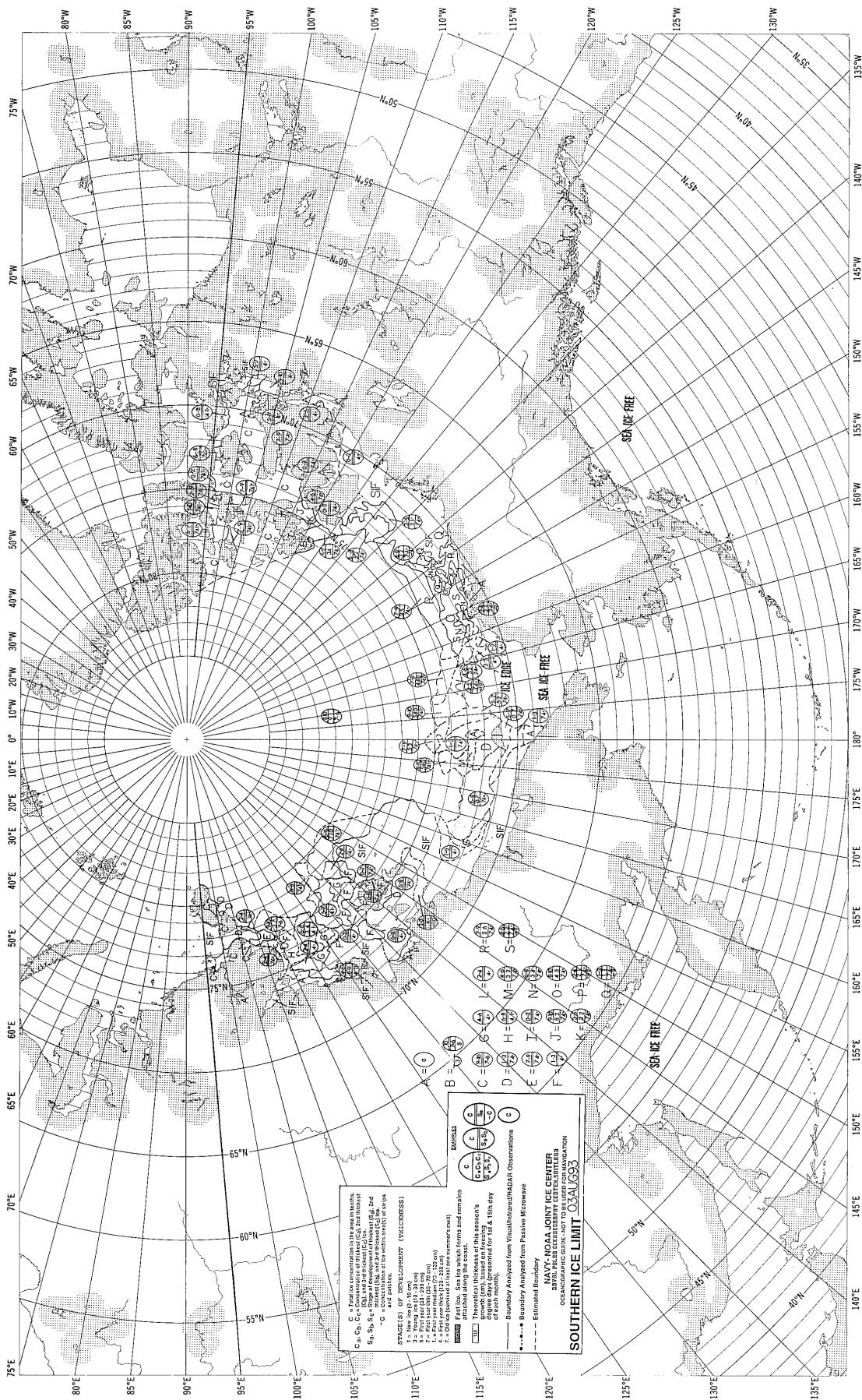


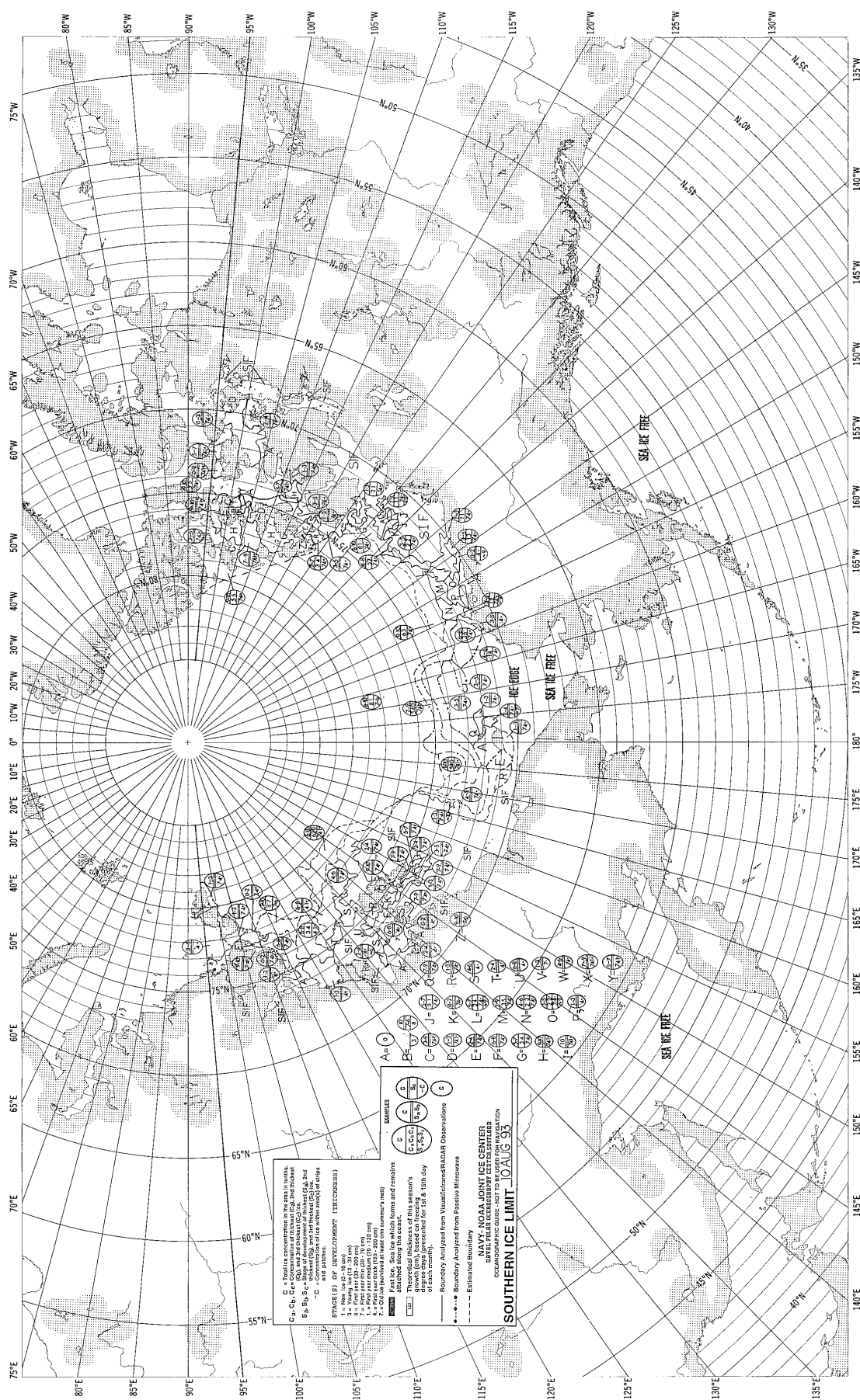


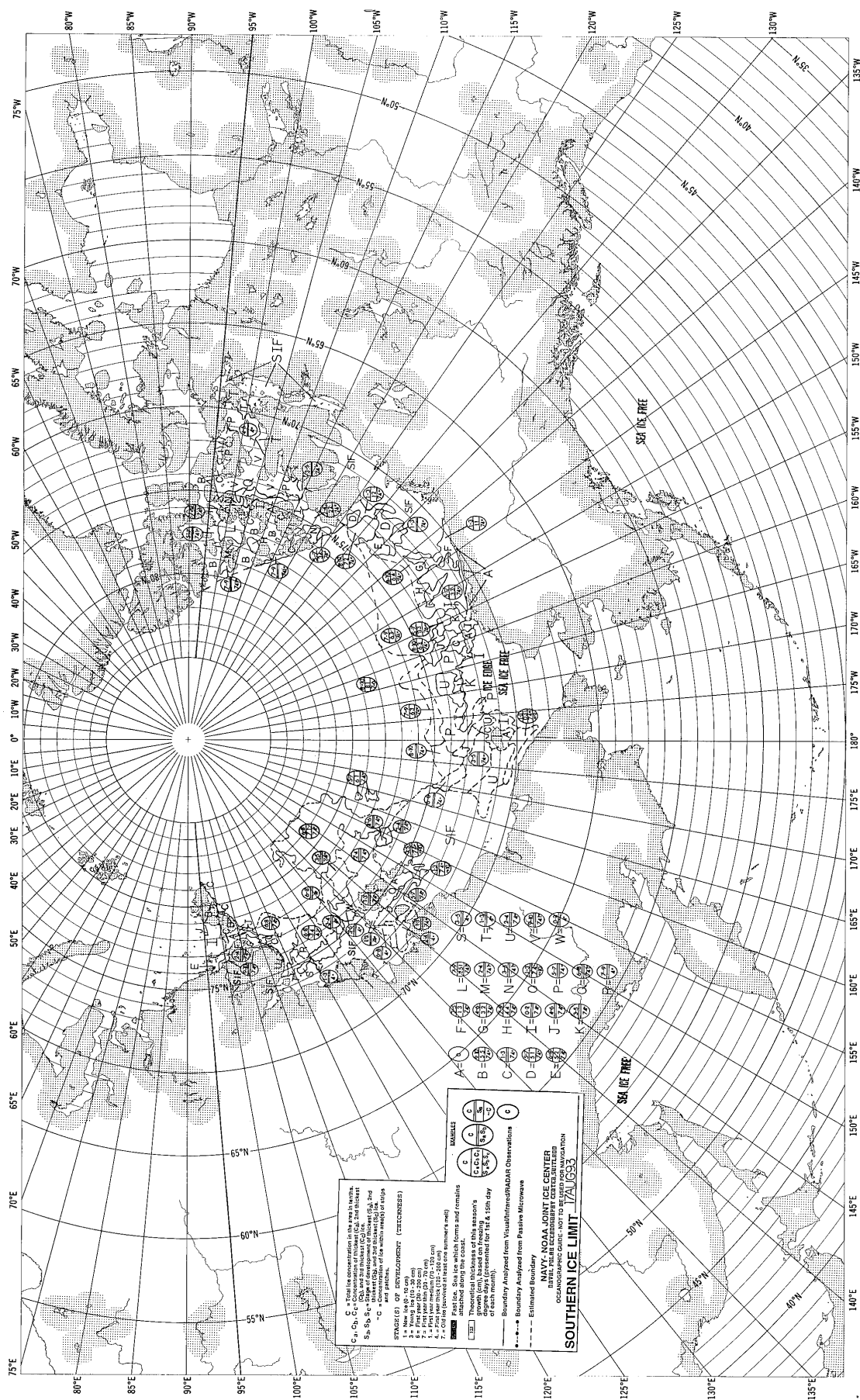


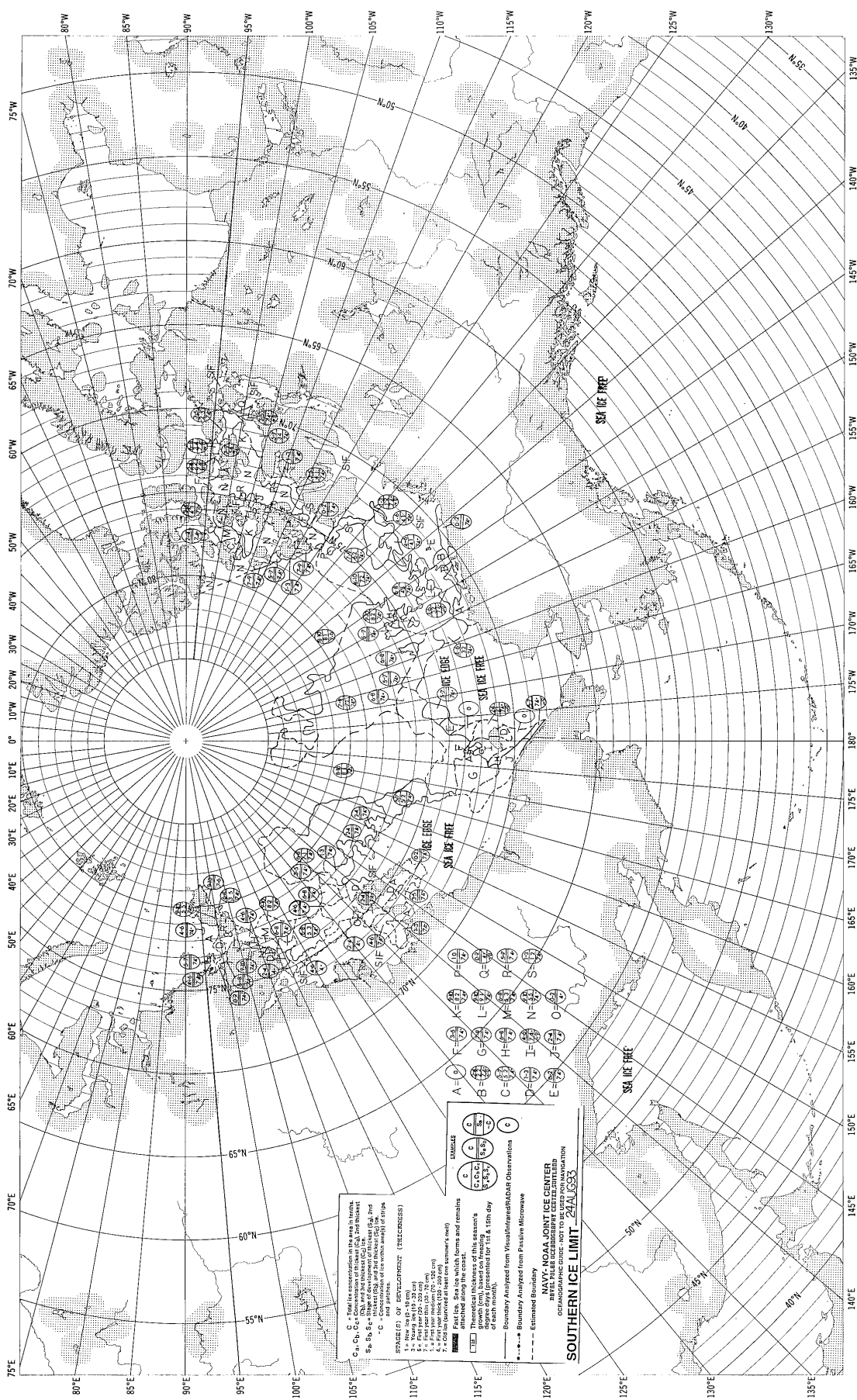


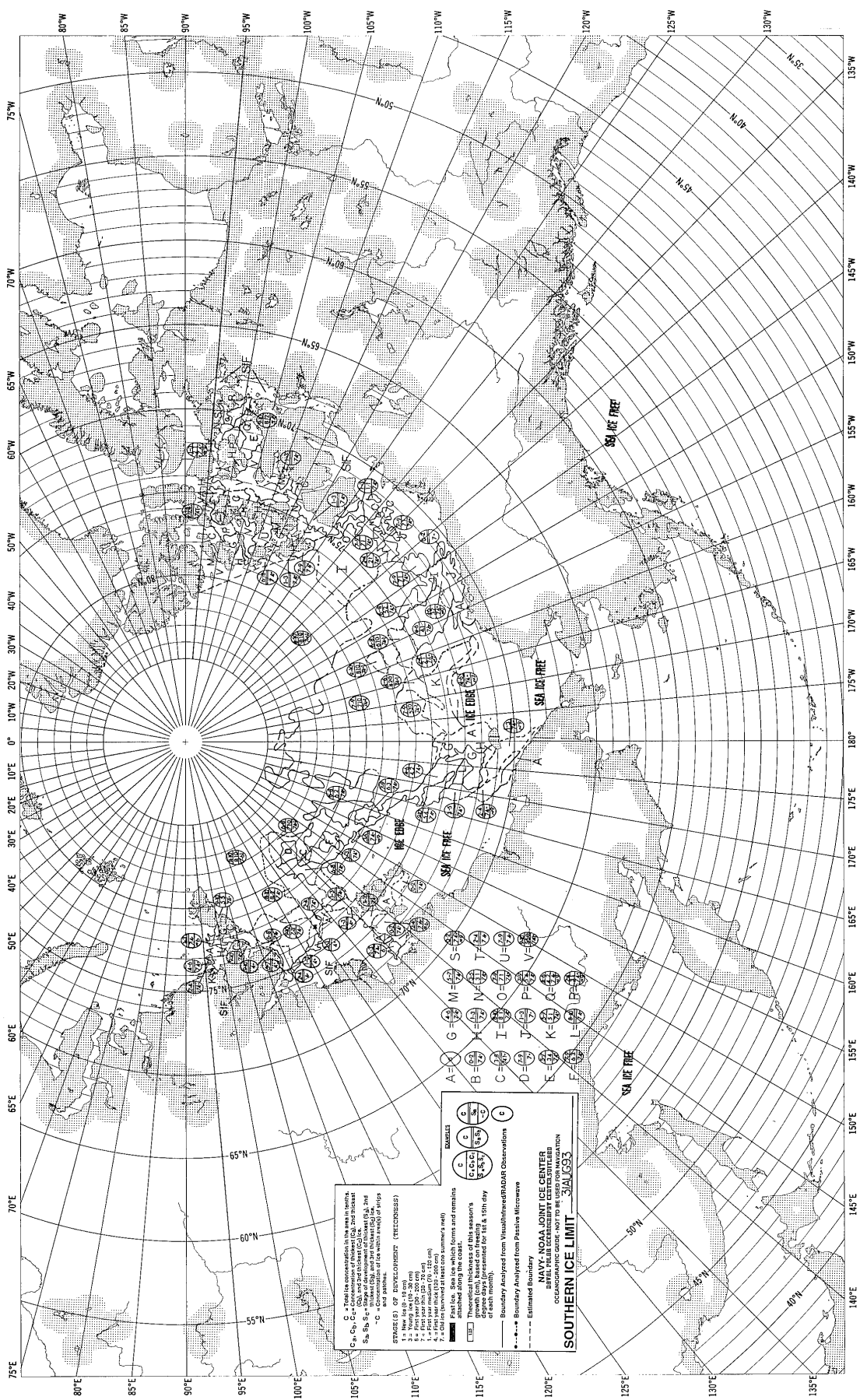


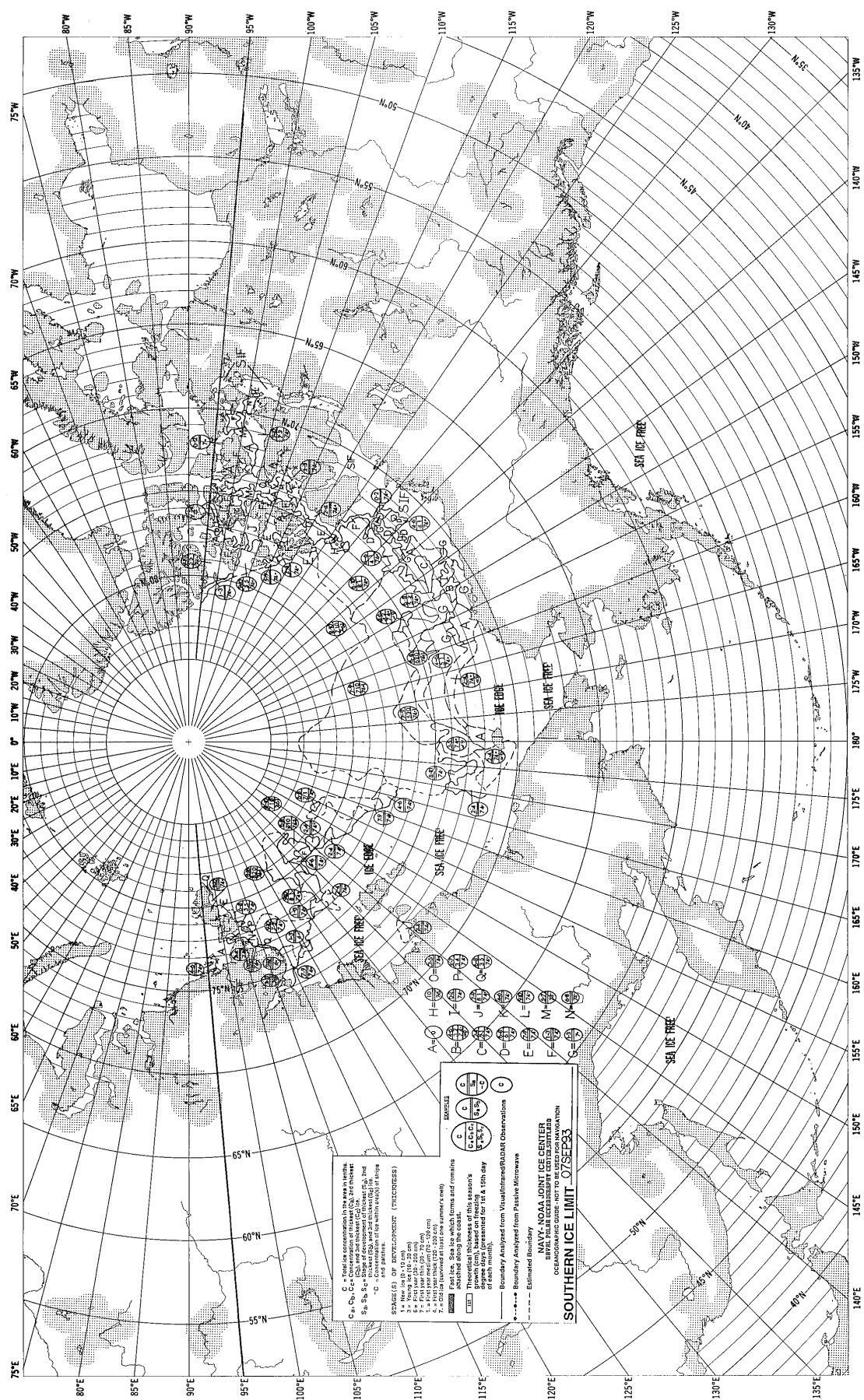


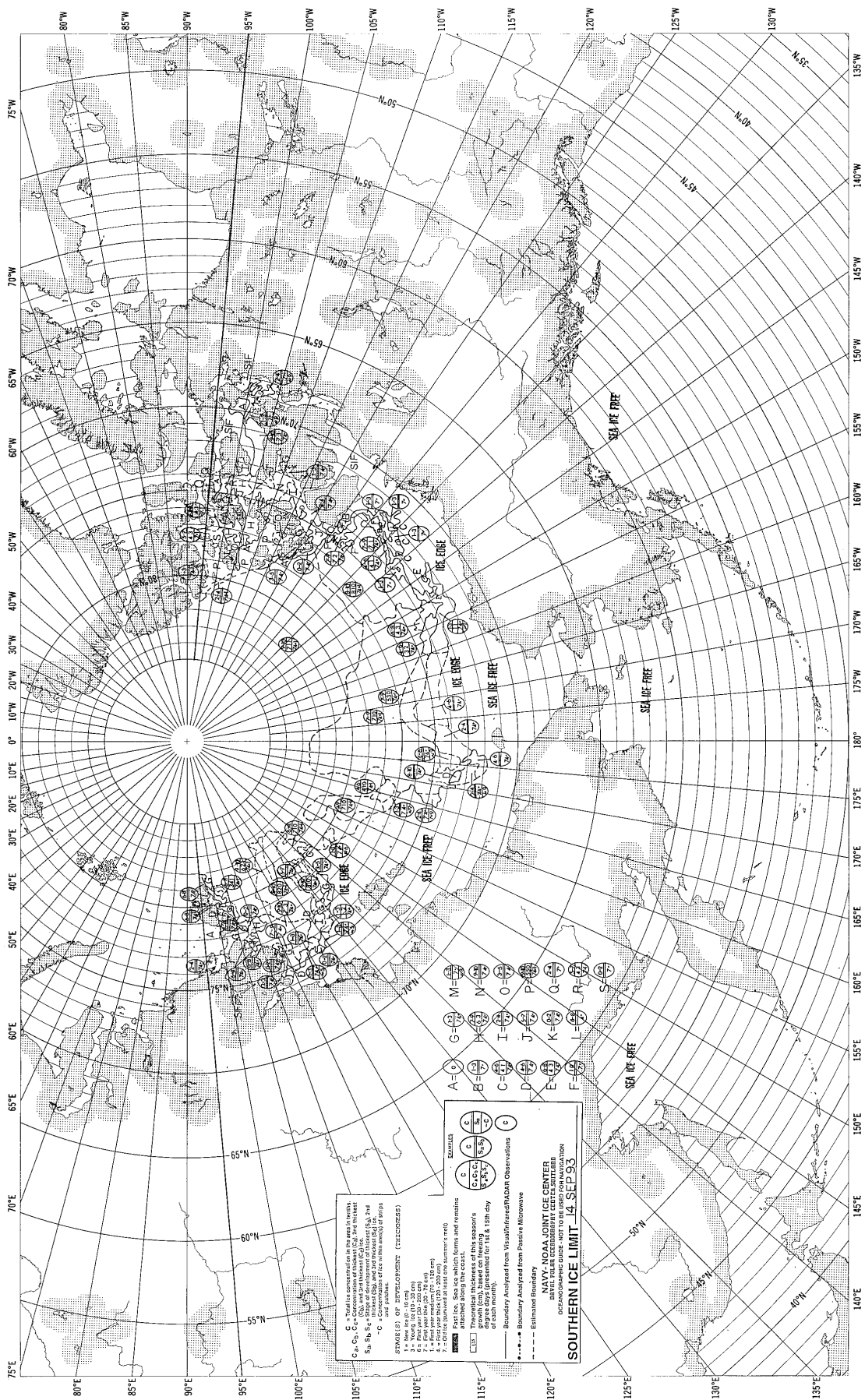


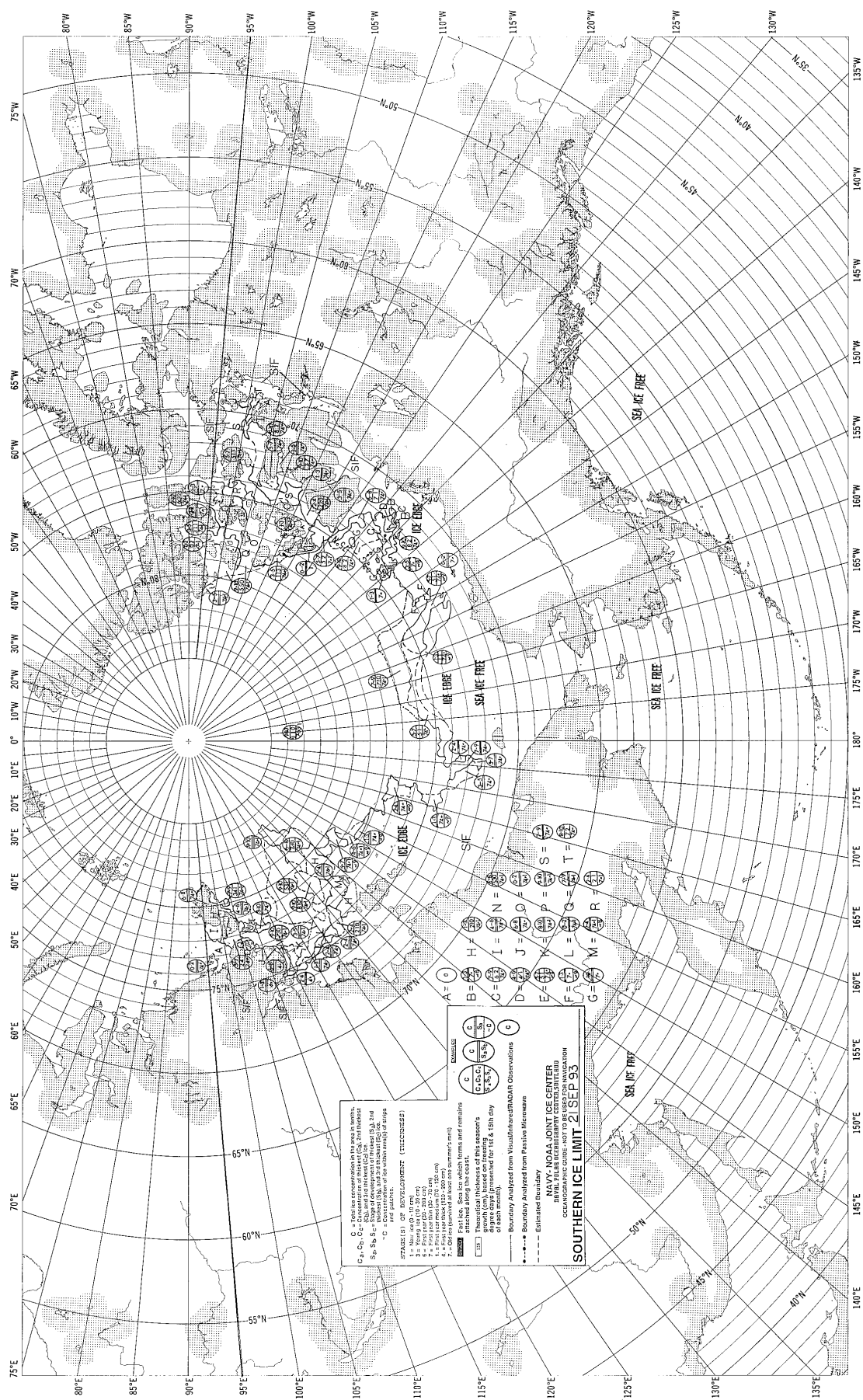


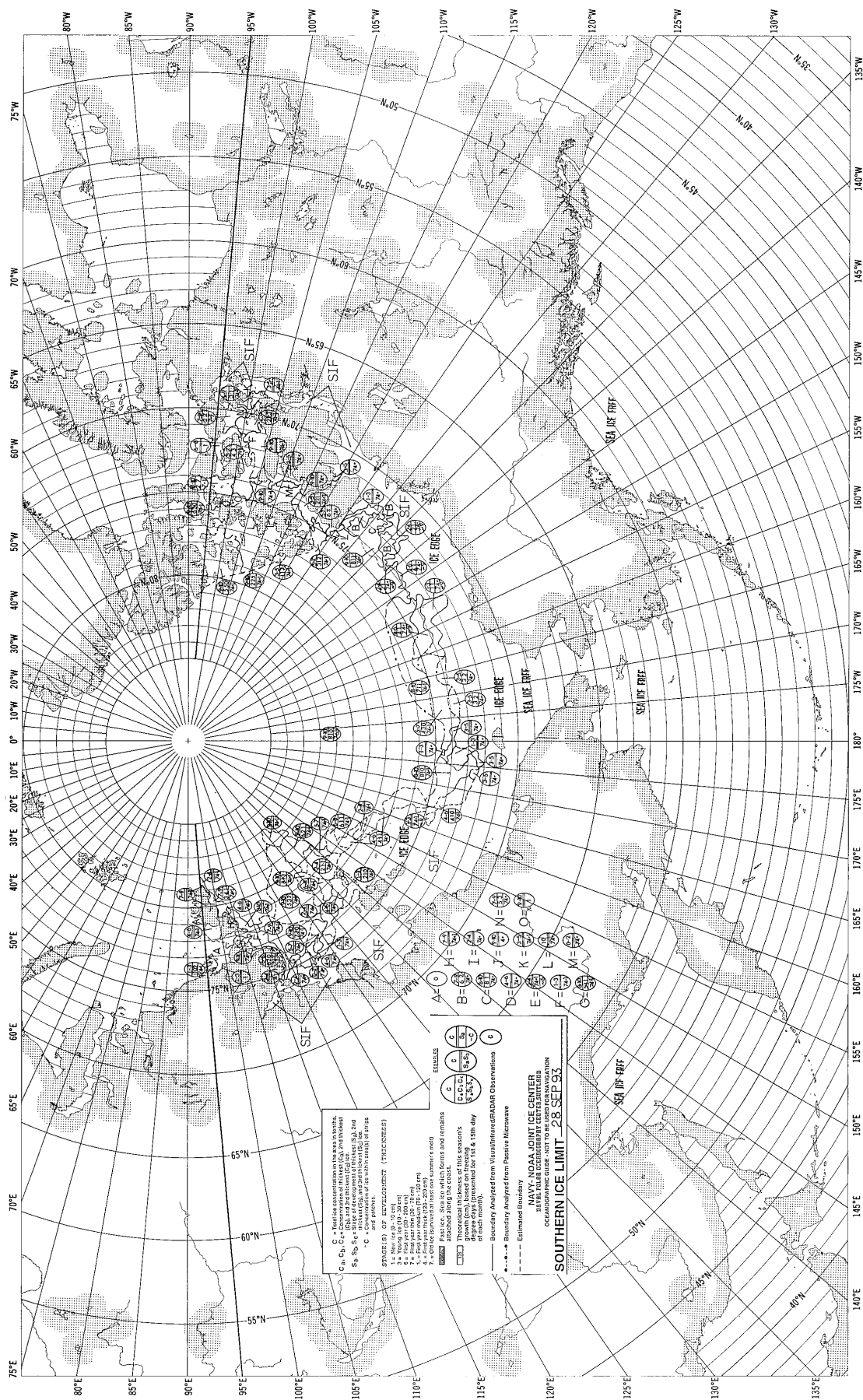


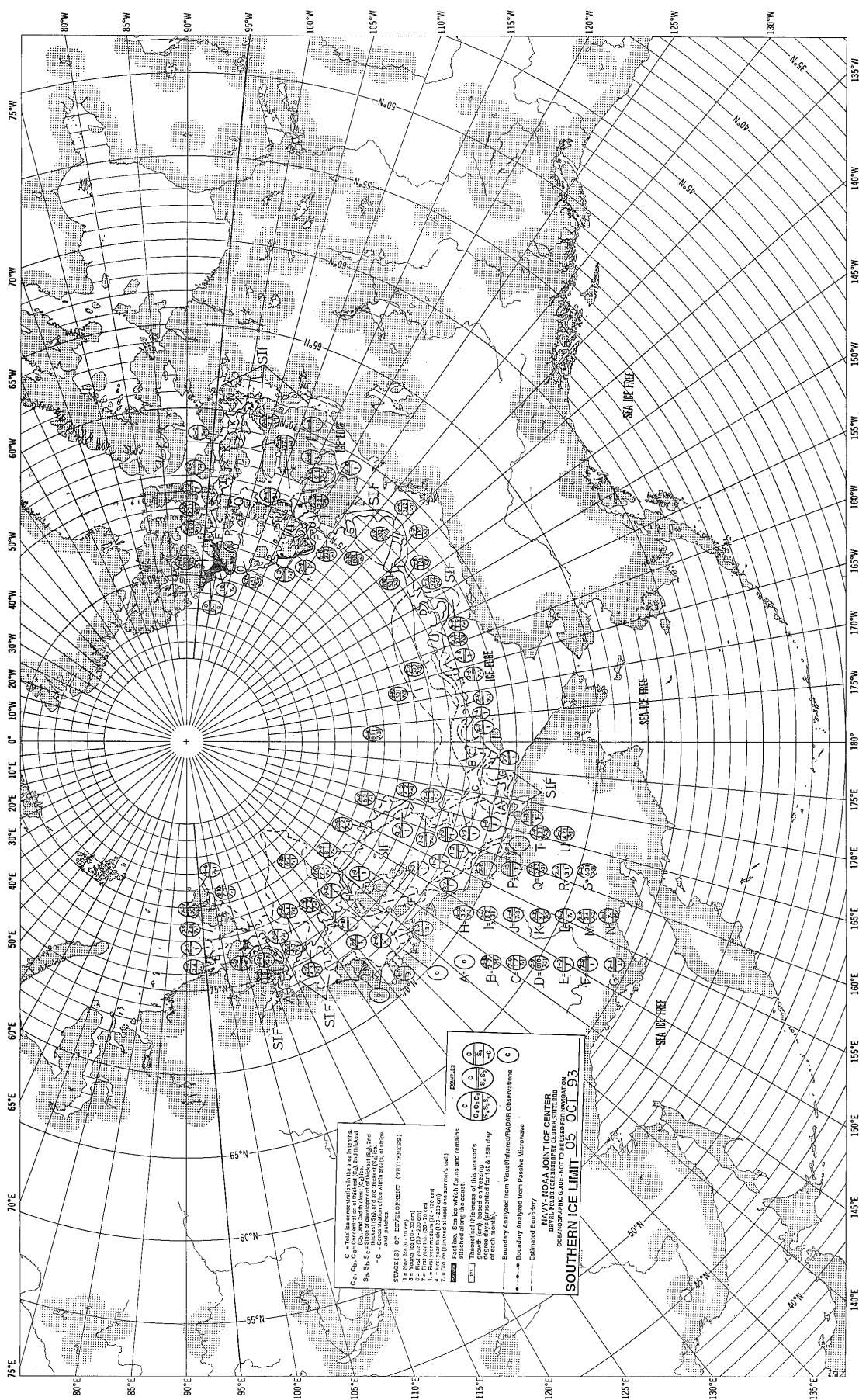


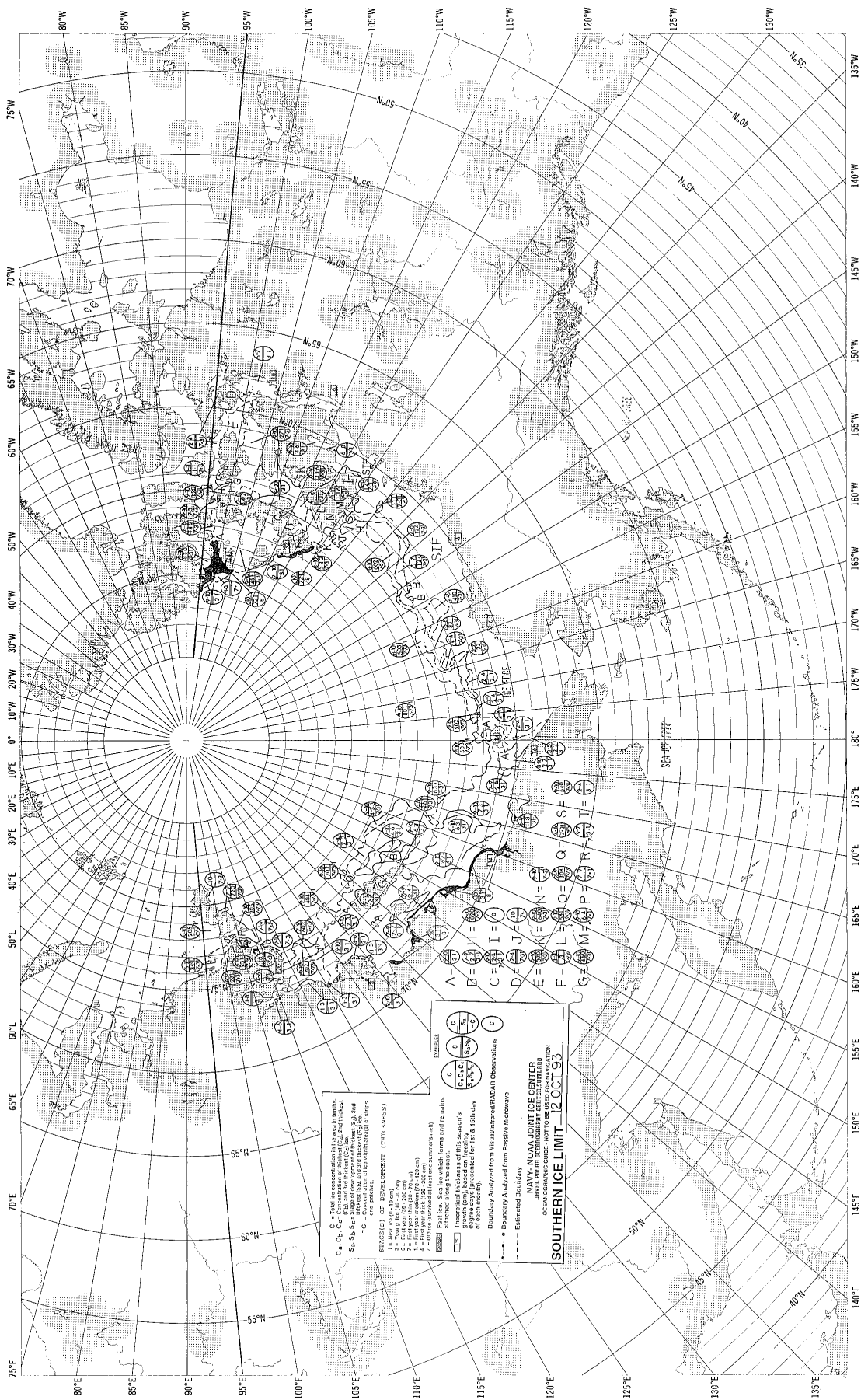


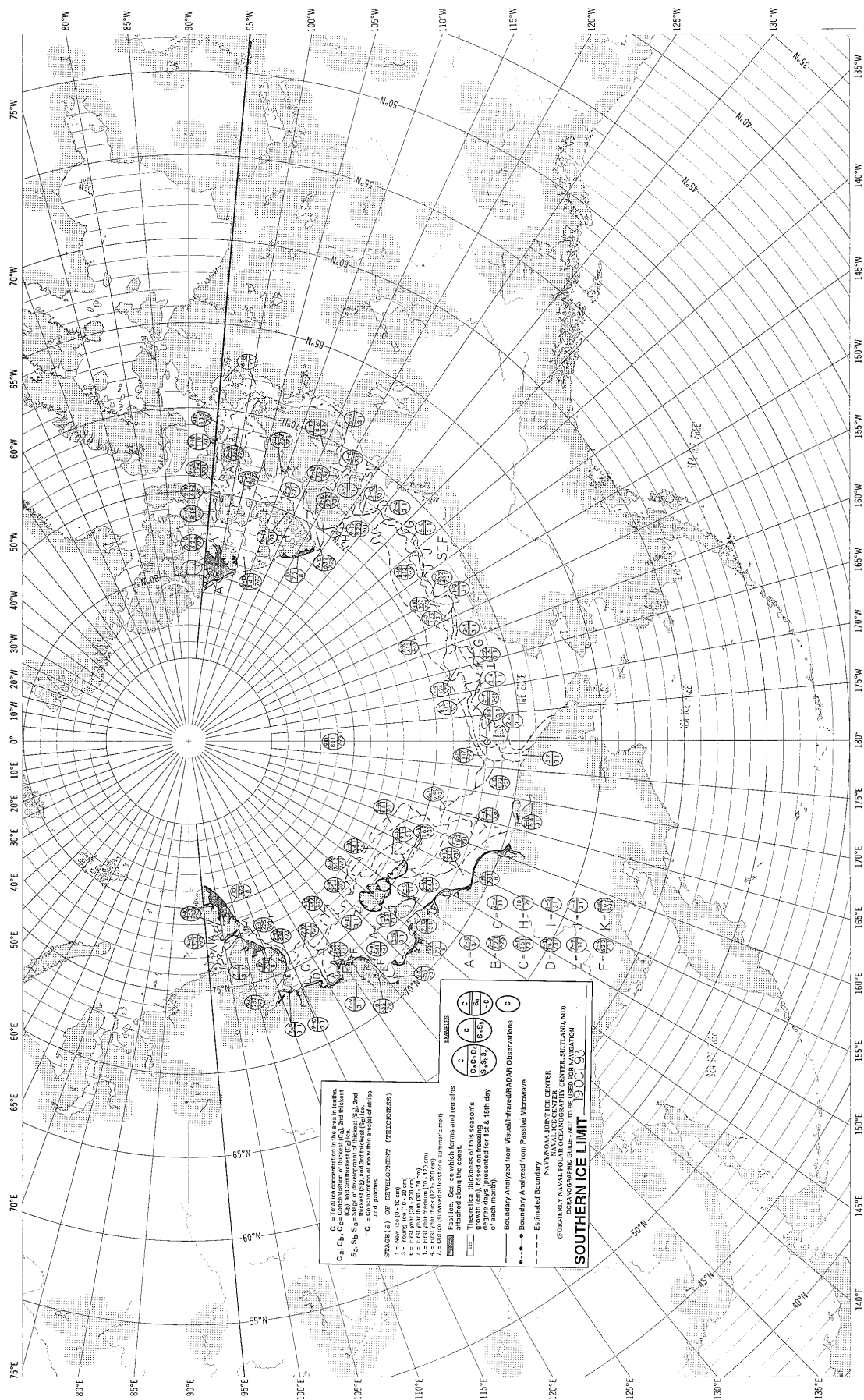


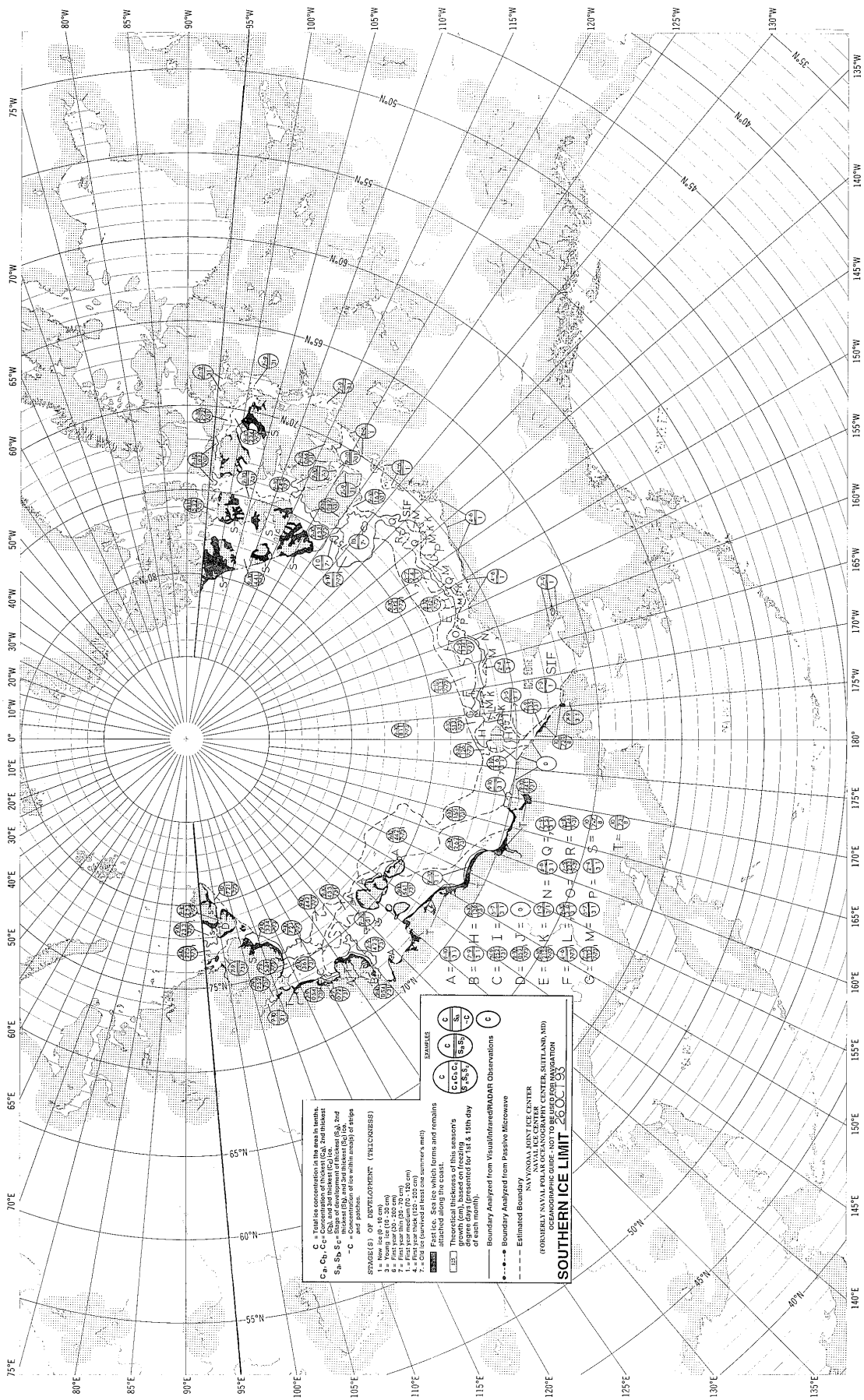


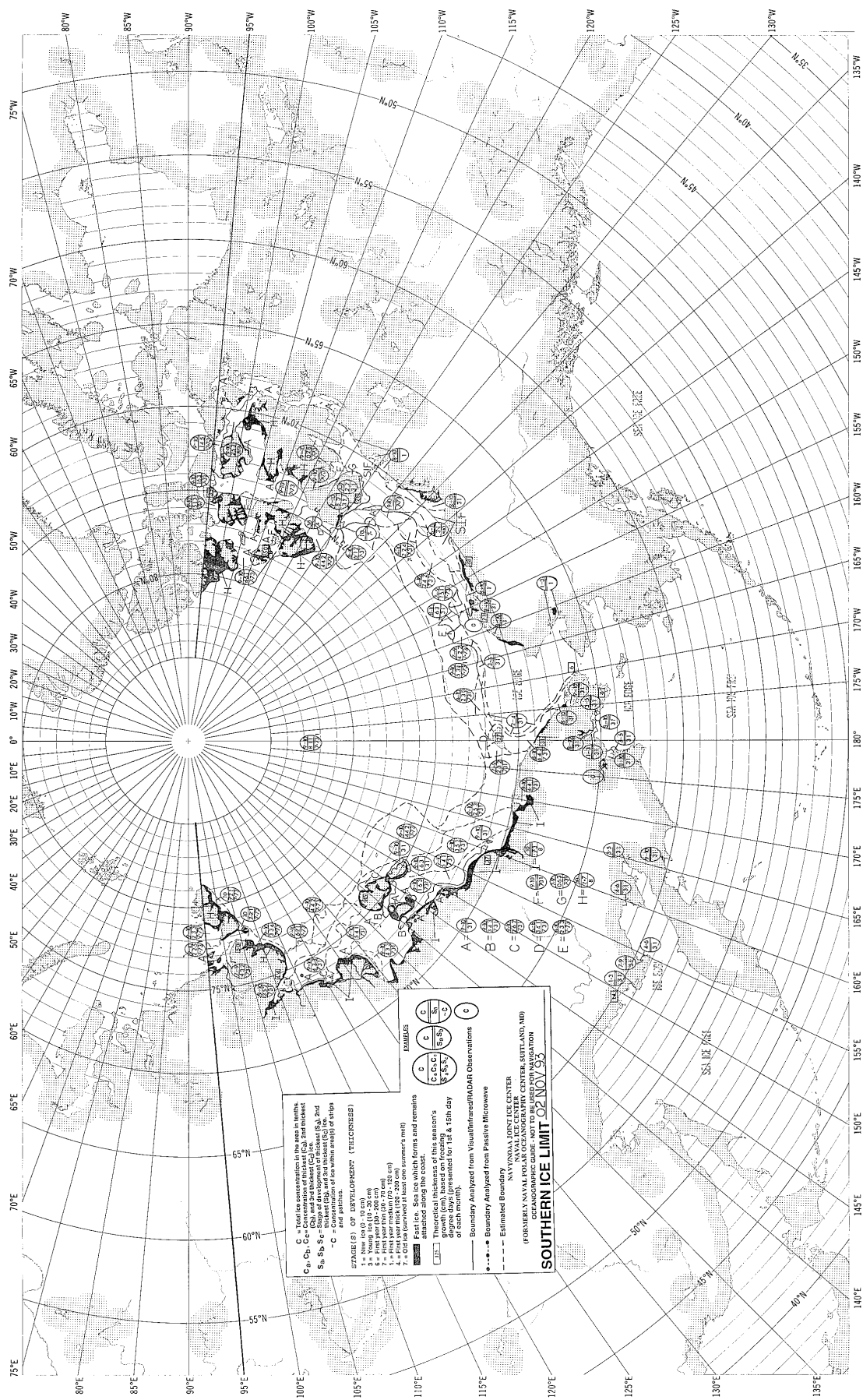


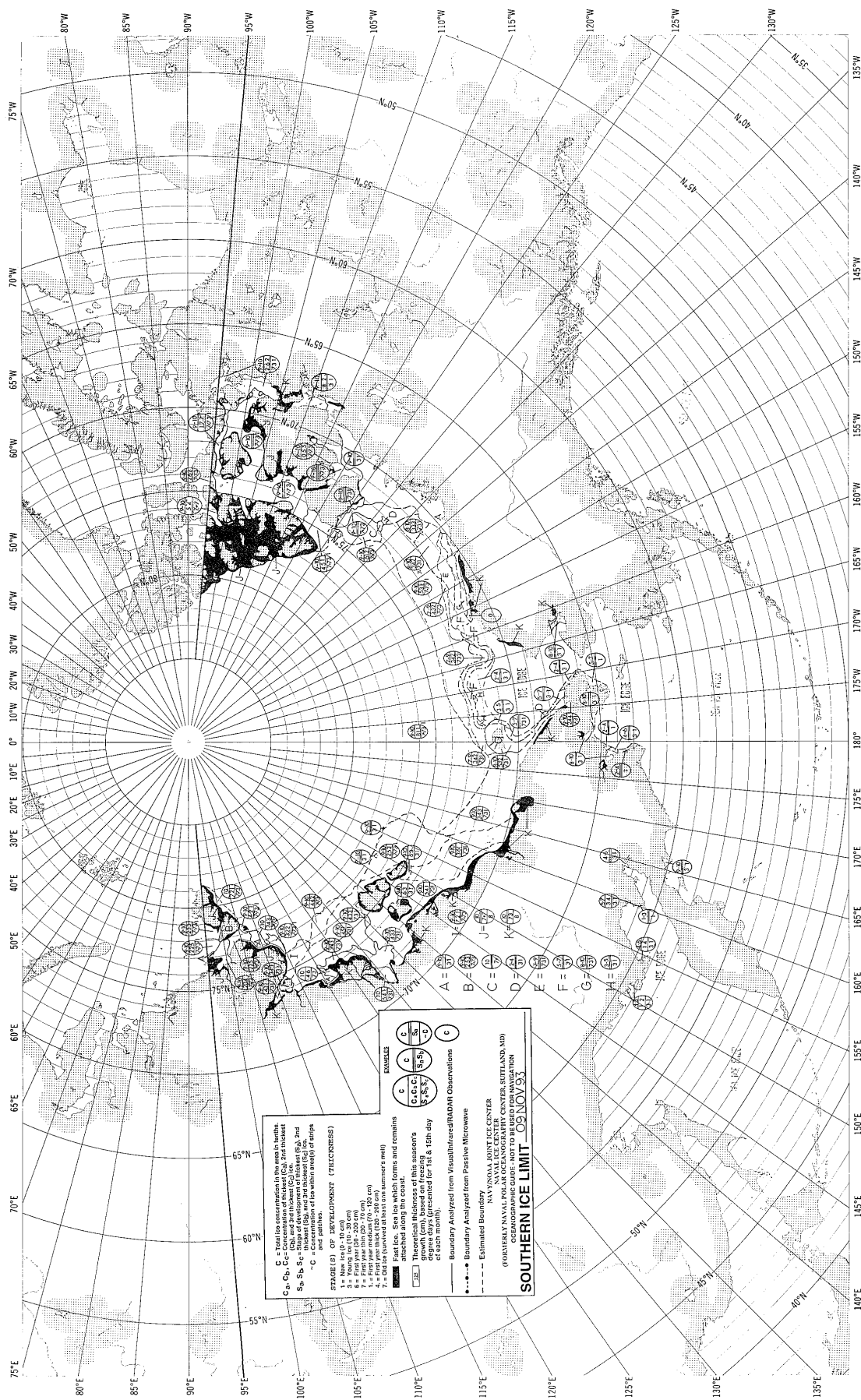




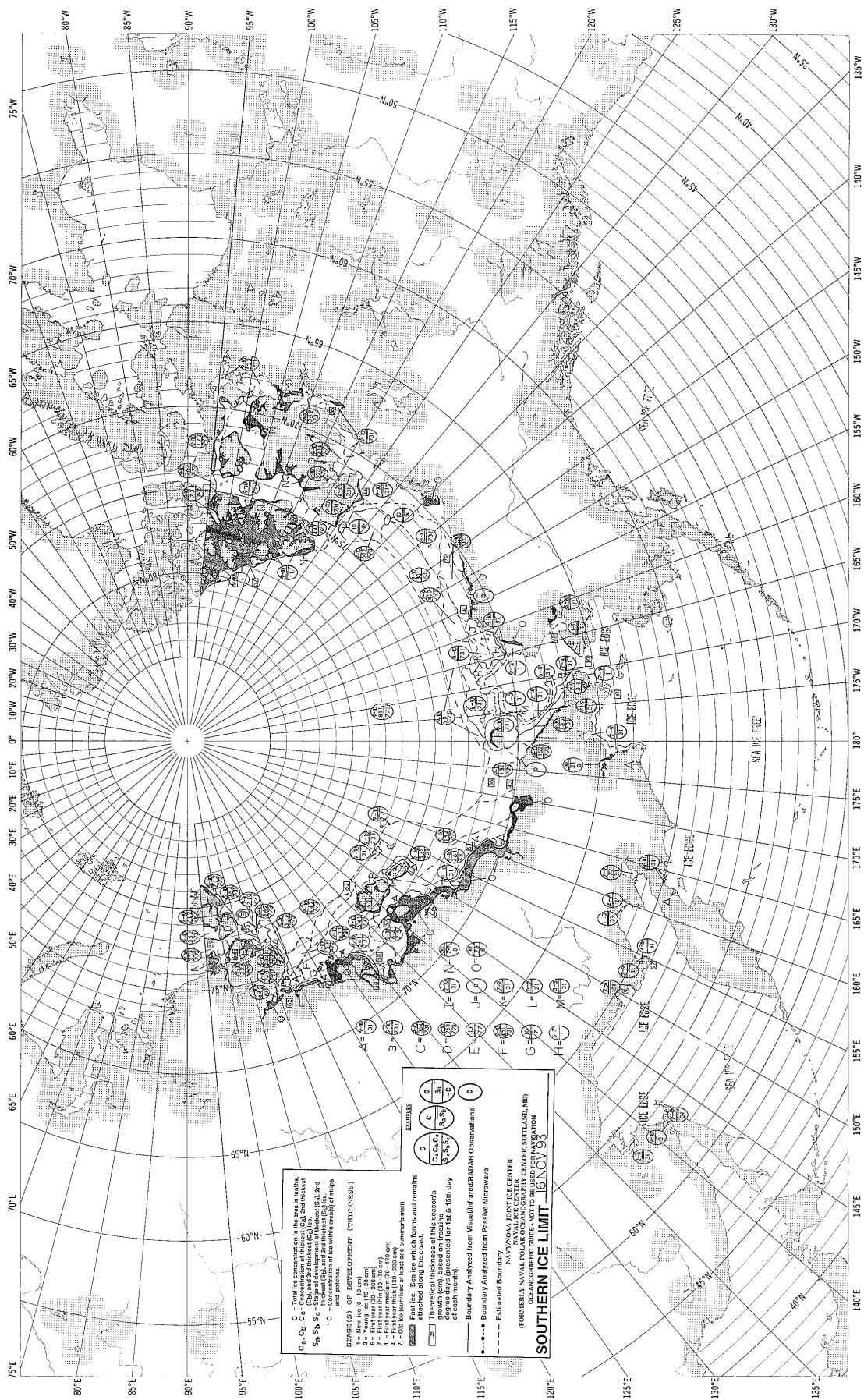


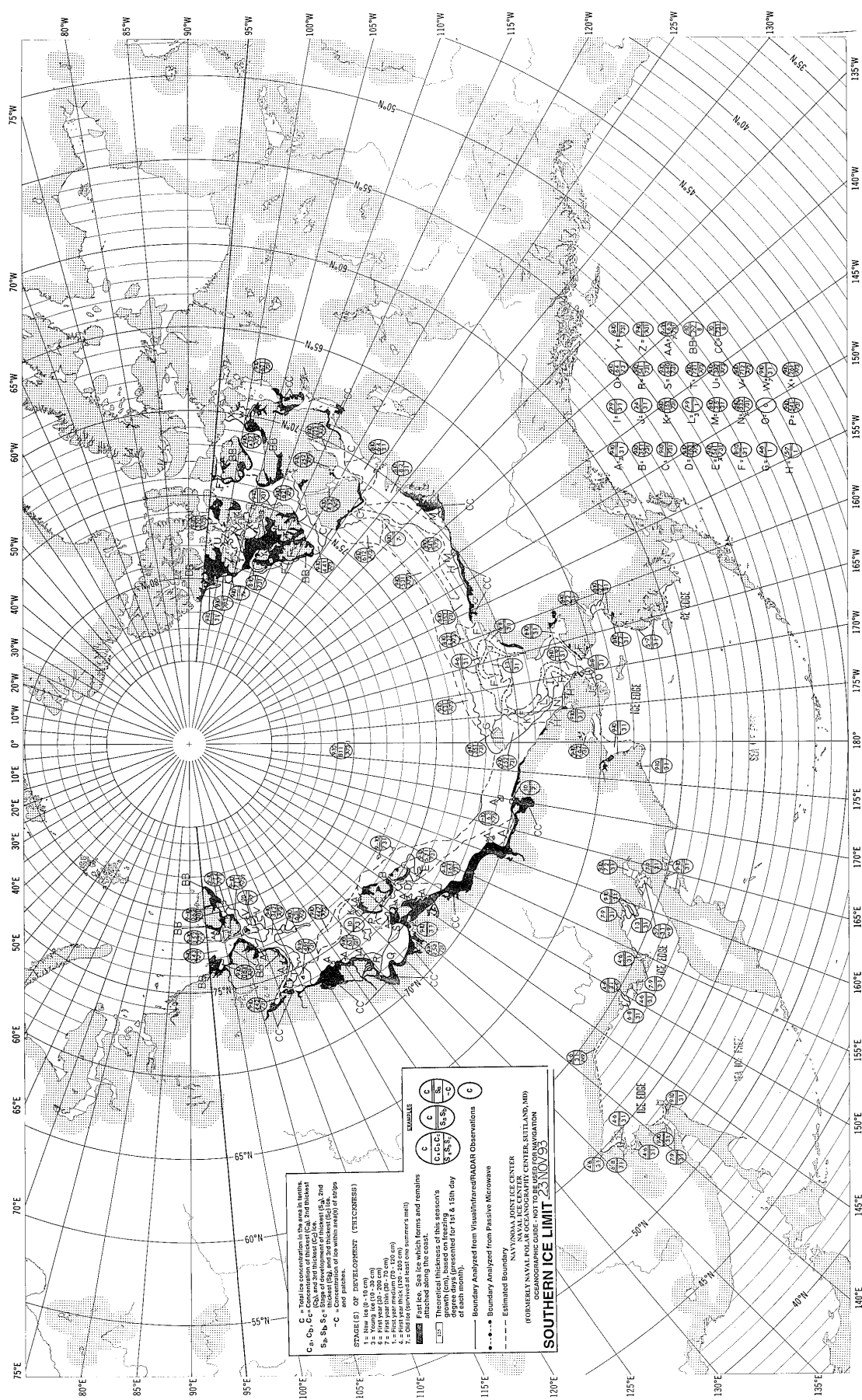


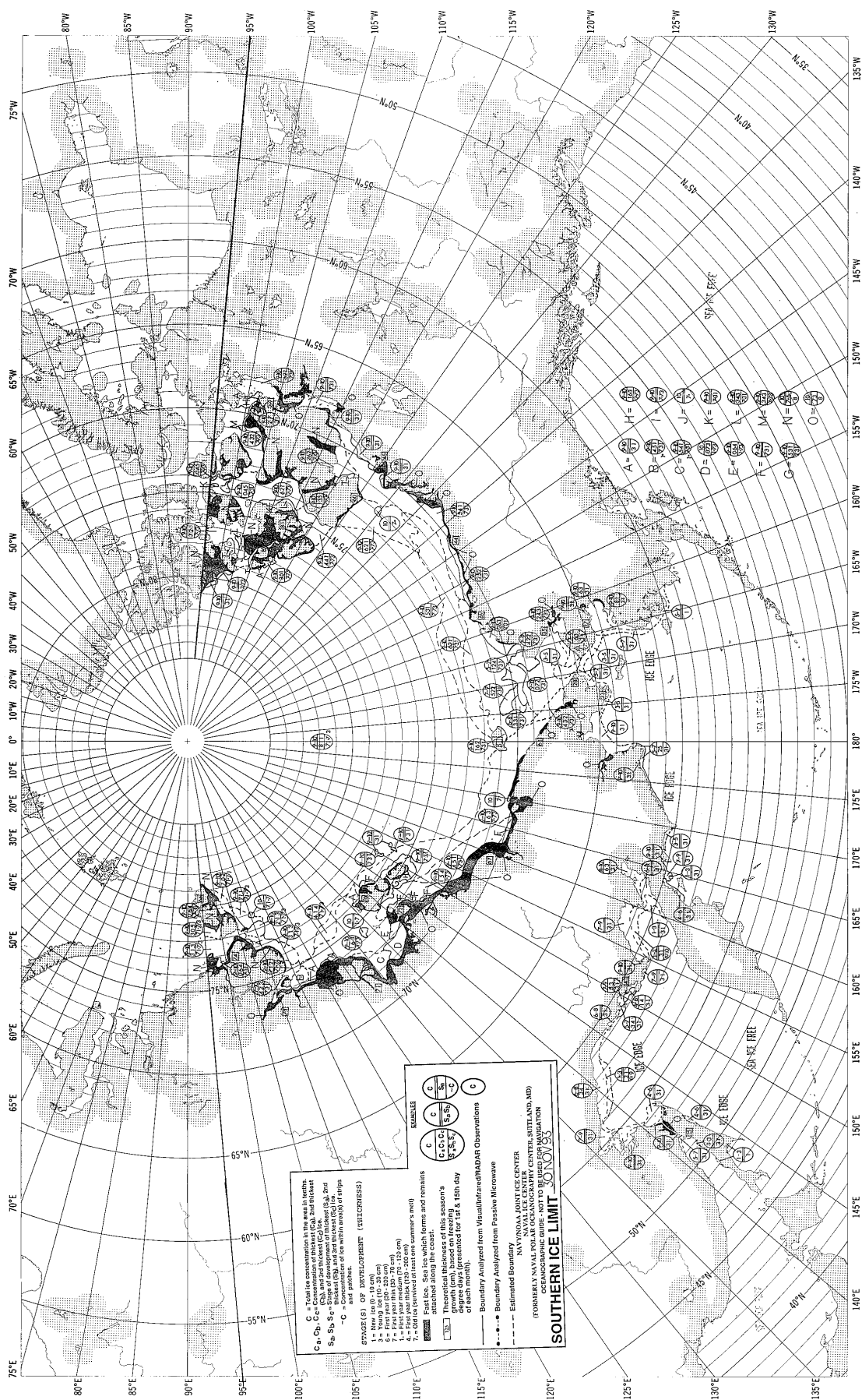


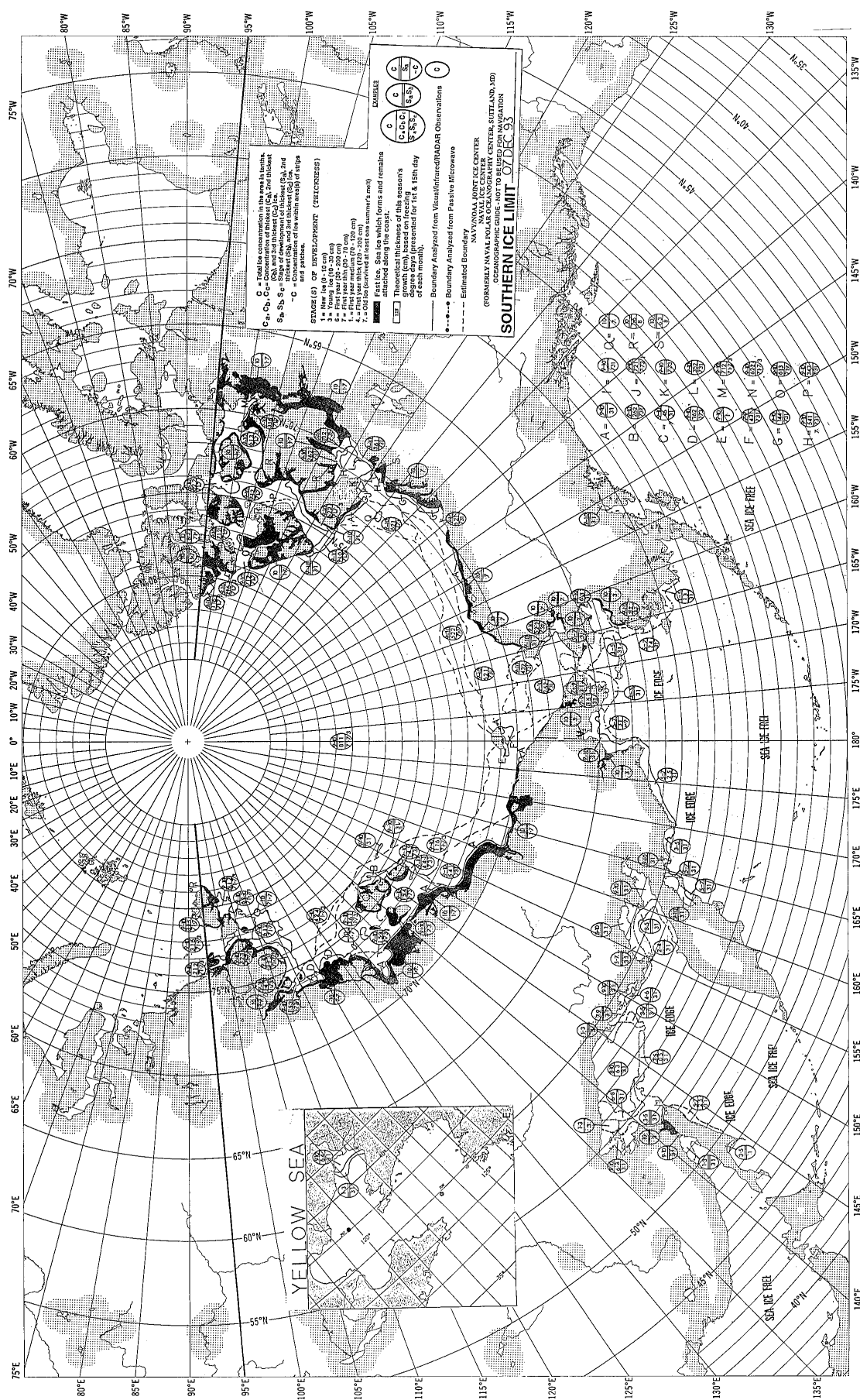


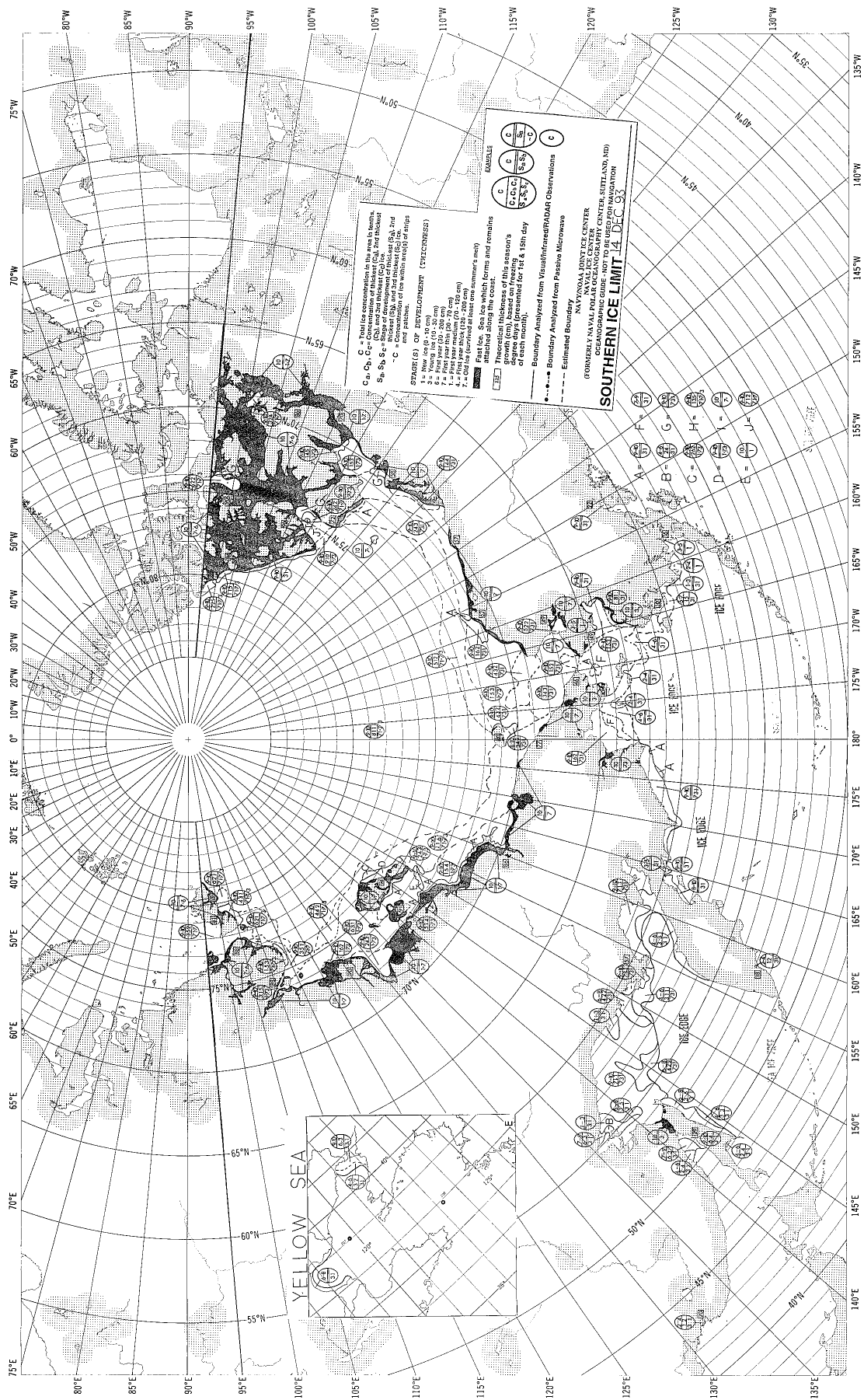
SOUTHERN ICE LIMIT 09 NOV 93

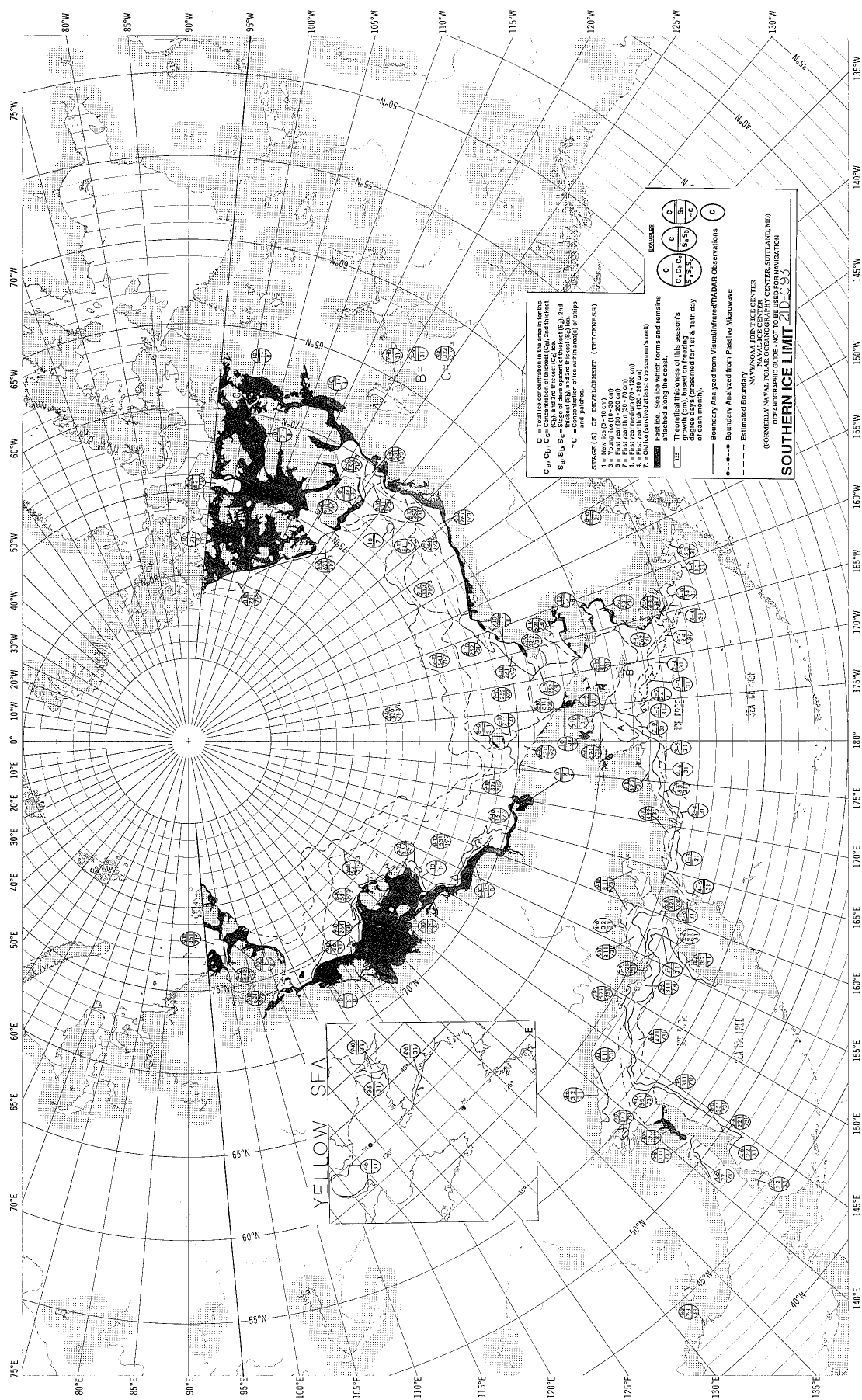












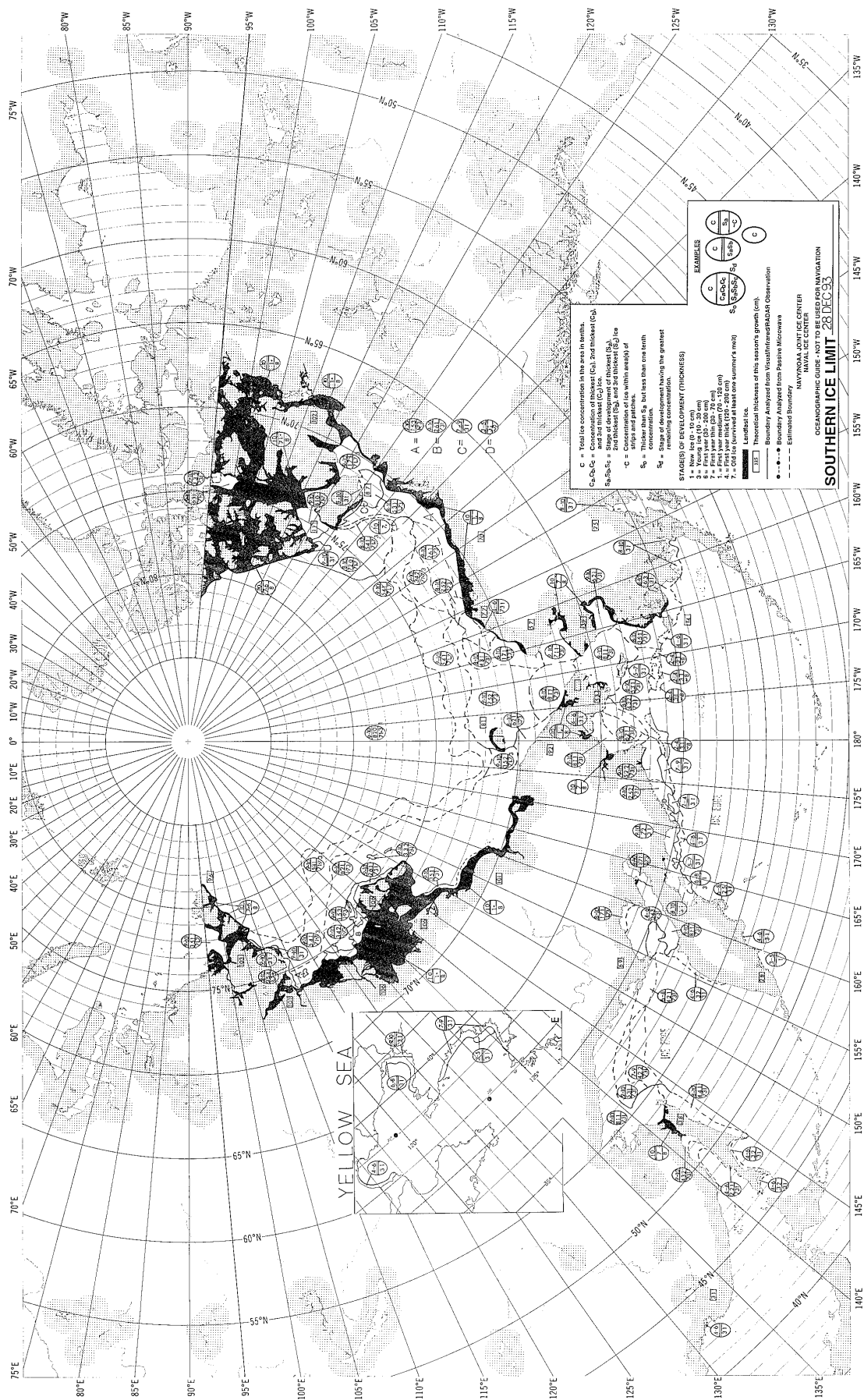


TABLE 1. SATELLITE DATA UTILIZED IN 1993

From	To	Sensor Platform	Sensor Type	Spectral Region	Resolution	Coverage
1-93	12-93	NOAA 10,11,12	<u>AVHRR</u> <u>HRPT/LAC</u> VIS NIR IR	0.58-0.68 um 0.725-1.10 um 10.5-12.5 um	1.1 km at nadir	Regional
			<u>GAC</u> VIS IR	0.58-0.68 um 10.5-12.5 um	4 km	Global
1-93	12-93	DMSP F-10,11	<u>OLS FINE</u> VIS IR	0.4-1.1 um 10.2-12.8 um	0.55 km 0.55 km	Regional Regional
			SSM/I PMW	1.55 cm (19.35 Ghz) and 0.81 cm (37.00 Ghz)	50 km 25 km	Global Global
1-93	12-93	ERS-1	<u>SAR</u> AMW	C-Band (5.3 Ghz)	100 m -240 m	Local
						Local

Abbreviations and Acronyms:

AVHRR--Advanced Very High Resolution Radiometer

AMW--Active Microwave

cm--centimeter

GAC--Global Area Coverage

GHz--Giga-Hertz

HRPT--High Resolution Picture Transmission

IR--Infrared

km--kilometer

LAC--Local Area Coverage

NIR--Near Infrared

OLS--Operational Line Scan System

PMW--Passive Microwave

SSM/I--Special Sensor Microwave Imager

um--micrometer

VIS--Visible